

# Manufacturers Record

Reg. U. S. Patent Office



APRIL, 1936

BALTIMORE, MD.

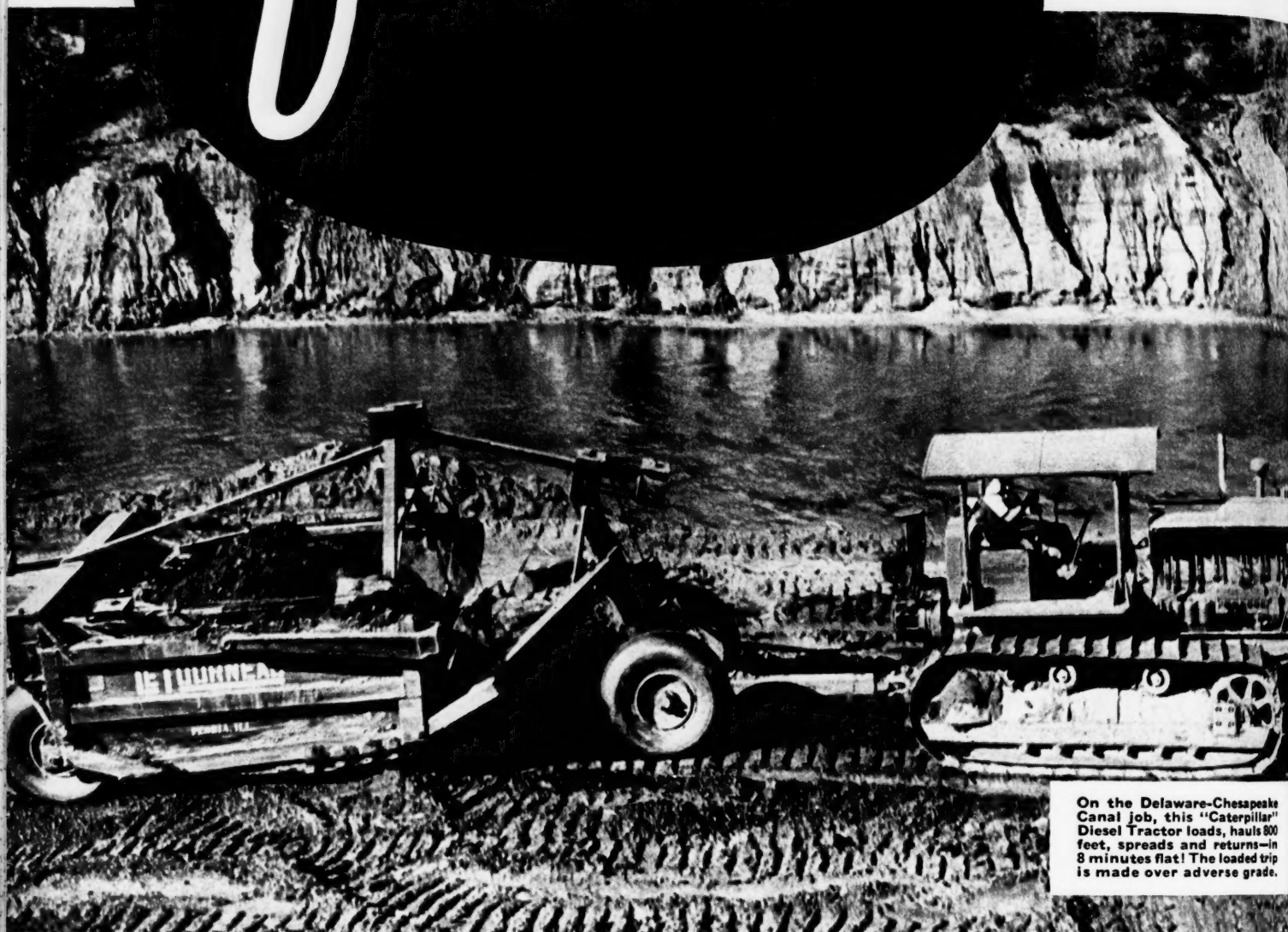
## TO MEET THE COST

Costly, unworkable experiments by government theorists have made higher taxes inevitable.

To penalize industry as now proposed kills the goose that lays the golden egg, and is dictated only by political expediency. It will add to unemployment, cripple small business and prove another obstacle to recovery.

The sane way to treat the tax question is by the adoption of a broad-based sales tax which will raise the required revenue, and give the people of America a clearer understanding of what government is costing.

# first



On the Delaware-Chesapeake Canal job, this "Caterpillar" Diesel Tractor loads, hauls 800 feet, spreads and returns—in 8 minutes flat! The loaded trip is made over adverse grade.

## *first* IN PERFORMANCE

The "Caterpillar" Diesel Tractor is shattering cost records, boosting work-production figures. That's why it stands first today. It has set new standards for tractor power. It has brought a new basis for figuring bids and planning schedules. And it is first choice on the big jobs and the small—because it is first in performance, first in low operating costs, first in dependability and long life and low up-keep. Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

### HARD FACTS ON THE SHOW-DOWN

A contractor on the Atlantic Gulf Canal reports: "Our two 'Caterpillar' Diesel Tractors haul an average of 85 cu. yds. of earth per hour on a 500-foot haul—entirely through deep sand. The cost is approximately 7 cents per cu. yd.!"

From an Iowa contractor: "With our 'Caterpillar' Diesel we haul 50% more material than with our gas tractors, and our hauling cost is cut in half."

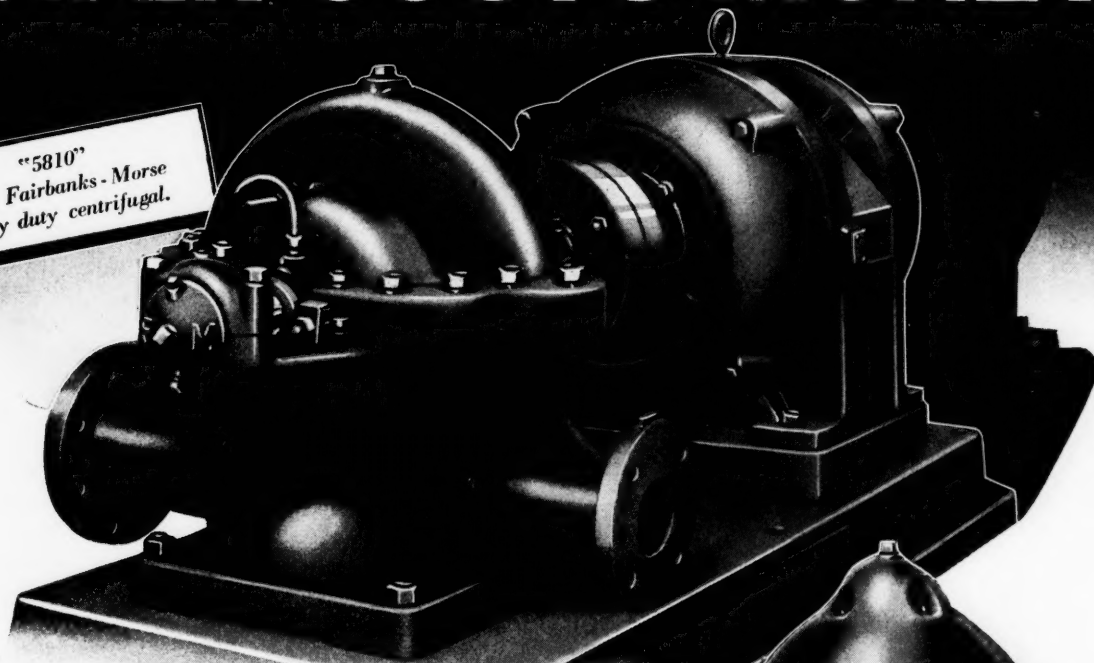
# CATERPILLAR

REG. U. S. PAT. OFF.



# WATER COSTS MONEY!

"5810"  
—A Fairbanks-Morse  
heavy duty centrifugal.



## F-M Pumps deliver it to the job at lower cost

● Like iron and steel, like cotton and copper, water is raw material and costs money to bring to your production line.

Are you cutting down the cost of water by handling it by the most efficient means possible? Are your pumps of the advanced hydraulic design that gives the most water for the least power expended?

If you can't answer an unhesitating yes to these two questions, a Fairbanks-Morse engineer should be called in to give you the facts and figures on your water supply. His report, based on the best engineering practice, will show you whether or not your plant's water requirements are being met efficiently—whether they are being met economically—if and how one of the many Fairbanks-Morse centrifugal or turbine pumps can save money for you.

This service is yours to command without cost or obligation. To get the facts, simply address Department G-31, Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill. 34 branches at your service throughout the United States.

F-M Turbine pumps  
provide water from  
deep well sources for  
every plant use.



106  
YEARS OF  
PRECISION  
MANUFACTURING

## FAIRBANKS-MORSE

# Pumps



POWER, PUMPING AND WEIGHING EQUIPMENT

6606PA40.31

Entered as second-class matter at the postoffice, Baltimore, Md., under the act of March 3, 1879, Volume CV, No. 4 Monthly

APRIL NINETEEN THIRTY-SIX

9

3

# Let's look at the record

The following tabulation shows the percentage of cast iron pipe used in the water distribution systems of the 15 largest cities in the United States as reported by their Water Departments.

CITY	PERCENTAGE
New York	97.2
Chicago	100.0
Philadelphia	98.3
Detroit	98.7
Los Angeles	74.0
Cleveland	98.9
St. Louis	98.7
Baltimore	99.7
Boston	99.8
Pittsburgh	97.9
San Francisco	76.8
Milwaukee	100.0
Buffalo	99.8
Washington D.C.	98.8
Minneapolis	95.8



***95% of the pipe which distributes water to the 24 million residents of our 15 largest cities is Cast Iron Pipe***

**W**HY does New York City with 4600 miles of water distribution mains—Chicago with 3700 miles—Boston with 1000—and the 12 other largest cities in the United States—depend almost exclusively on cast iron pipe for water distribution mains? The answer is ultimate and unquestioned economy. A cast iron pipe line can be relied on to continue in service for generations after the bonds issued to pay for it shall have been retired. Cast

iron pipe is the standard material for water mains. It costs less per service year and least to maintain. Its useful life is *more than a century* because of its effective resistance to rust. It is the one ferrous metal pipe for water and gas mains, and for sewer construction, that will not disintegrate from rust.

For further information, address The Cast Iron Pipe Research Association, Thos. F. Wolfe, Research Engineer, 1015 Peoples Gas Building, Chicago, Ill.

## CAST IRON PIPE

METHODS OF EVALUATING BIDS NOW IN USE BY ENGINEERS



RATE THE USEFUL LIFE OF CAST IRON PIPE AT 100 YEARS

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OF  
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APRIL  
1936

Volume CV No. 4

MANUFACTURERS  
RECORD

Devoted to the Upbuilding of the  
Nation Through the Development  
of the South and Southwest as the  
Nation's Greatest Material Asset

*Published Monthly*  
by the  
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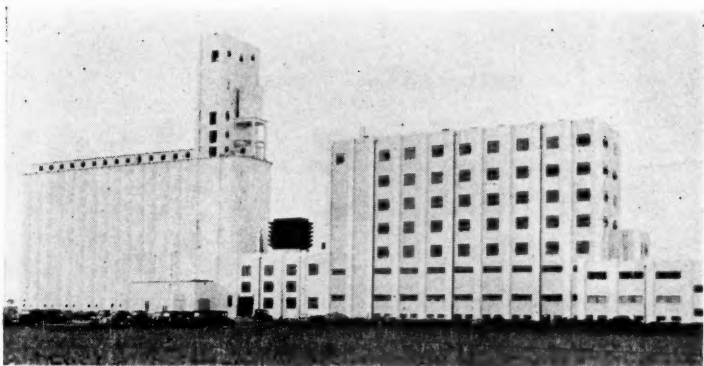
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turers Record and Daily Construction Bulletin, \$10.50  
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**PUBLISHERS DAILY CONSTRUCTION BULLETIN AND  
BLUE BOOK OF SOUTHERN PROGRESS**

Member  
A.B.C.

APRIL NINETEEN THIRTY-SIX



Complete \$500,000 Addition At Fort Worth, Texas. Plant of Burrus Mill & Elevator Co.

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# *The greatest advance* **the BARRETT**



*Barrett*  
**ROOFS**

Copr. 1936 The Barrett Company

This International Harvester Company building at Fort Wayne, Indiana, is protected by 109,000 square feet of Barrett Roofs, bonded against repair and maintenance expense for 20 years. Owner: International Harvester Company, Chicago, Illinois. Gen'l Cont.: Indiana Engineering and Contracting Company, Ft. Wayne. Rfg. Con't.: Knickerbocker Roofing and Paving Company, Chicago.

(Above) Close-up of a Barrett Steep Roof Pitch installation showing the firmly embedded gravel wearing surface, characteristic of Barrett Coal-tar Pitch and Felt Roof.

**BARRETT**

MANUFACTURERS RECORD FOR

# *in* **ROOFING** *since* **SPECIFICATION ROOF**

**F**OR years, the roofing industry has sought a roof for steep roof buildings that would match in performance built-up roofs of coal-tar pitch, felt and gravel on flat roof decks.

Barrett Steep Roof Pitch, a new and revolutionary building product, now provides a complete solution. Here is a product that combines *with unusual stability* all the unmatched waterproofing and weatherproofing characteristics of coal-tar pitch. The development of this product broadens the field for built-up roofs to include many types of buildings hitherto denied the advantages of this type of roof construction.

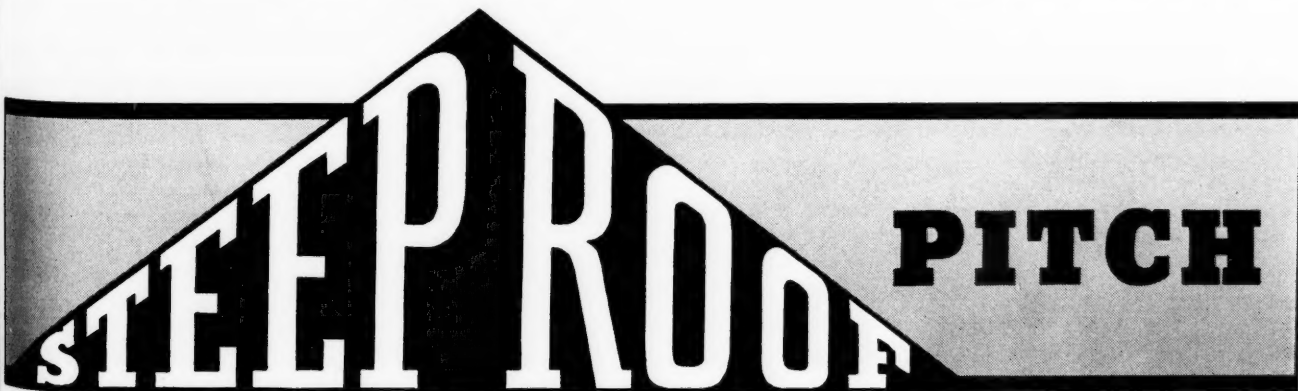
Barrett Steep Roof Pitch is the result of years of painstaking research and experiment, and ranks in importance with the famous Barrett Specification Roof, the practice of bonding roofs, the Barrett Approved Roofer organization and other developments that have distinguished Barrett's 82 years of leadership in roofing.

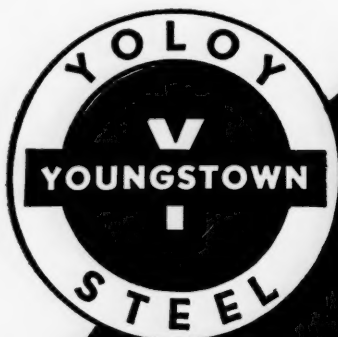
Field and laboratory tests under extreme conditions show that Barrett Steep Roof Pitch possesses unequalled resilience and self-healing qualities, will not slide or "bleed" at the highest temperatures to which roofs are subjected, will withstand intense cold without cracking or loss of bond, it holds gravel or slag firmly in place, and possesses the body, bond and waterproofness which have made coal-tar pitch the world's outstanding roofing value.

Steep roofs of Barrett Steep Roof Pitch and Barrett Specification Felt with a fire-safe gravel or slag wearing surface applied according to Barrett Specifications by Barrett Approved Roofers are bonded by the United States Fidelity and Guaranty Company against repair and maintenance expense for 20 years.

For complete information consult with your local Barrett Approved Roofer, or with us. Detailed specifications are published in Sweet's, and are available for distribution.

**THE BARRETT COMPANY, 40 RECTOR STREET, NEW YORK, N. Y.**  
2800 So. Sacramento Ave., Chicago, Ill. Birmingham, Alabama





# COMPLETELY MACHINABLE *After* WELDING

The composition of YOLOY is such that its unique properties persist after welding. The alloy "stays put" in the weld and does not air-harden, making machining across the weld perfectly practical.

As compared with ordinary carbon steels, YOLOY possesses four to six times the corrosion-resistance, withstands abrasion better, and at the same time gives you increased tensile strength. At a lower ultimate cost than carbon steel, YOLOY permits lighter construction with equal strength or greater strength and longer life with the same weight.

Write for YOLOY Bulletin.

565

## YOLOY

is furnished in sheets, strips, plates, bars, shapes, manufacturer's wire, welding wire, seamless and electric weld pipe.

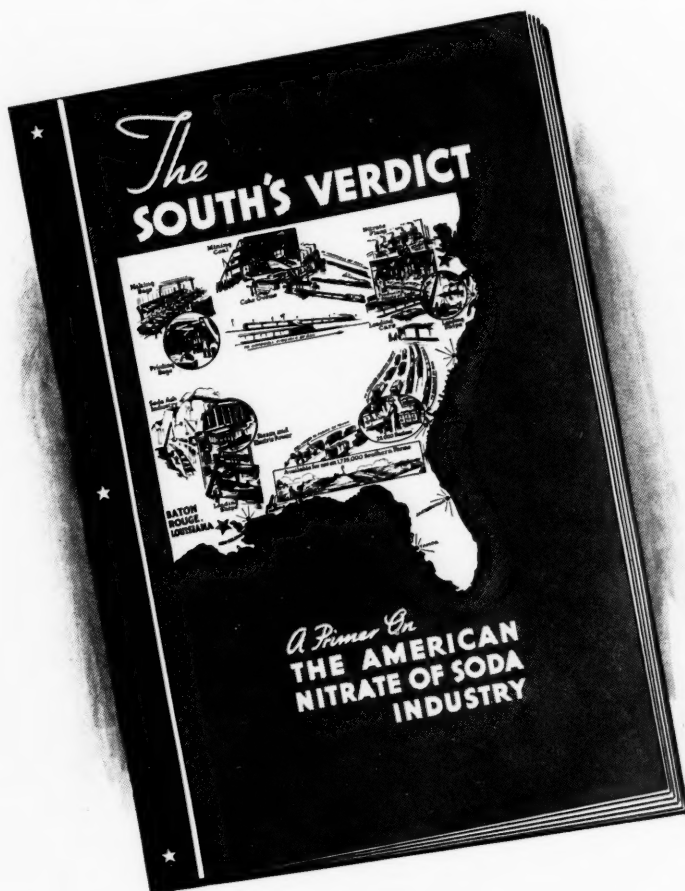
### THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of Carbon and Alloy Steels  
General Offices - YOUNGSTOWN, OHIO

Tubular Products; Sheets; Plates; Tin Plate; Bars;  
Rods; Wire; Nails; Conduit; Unions;  
Tie Plates and Spikes.

MANUFACTURERS RECORD FOR





## The Progress of the South

All who have the welfare of the South at heart will be interested in this book entitled "The South's Verdict." It tells of the development of the great American Nitrate Industry, an outstanding Southern achievement, with comments by many leading Southerners.

This book, which represents an important "milestone" in the progress of the South, is published by The Agricultural Development Bureau of The Barrett Company to aid in fostering an active interest in the development of Southern industries. It will be sent free of charge to any reader of this magazine. We believe all Southern industrialists will want at least one copy.

The Agricultural Development Bureau  
of THE BARRETT COMPANY, 40 Rector St., N. Y.

Gentlemen: Please send me without obligation on my part, . . . . . copies of  
"The South's Verdict."

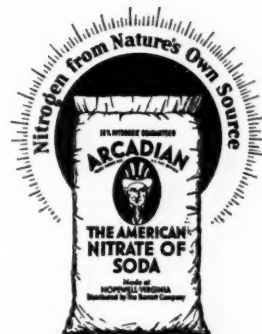
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(R)



# RECOGNITION

REQUISITION					
ORDERED BY	QUANTITY	CODE NO.	DESCRIPTION	WEIGHT	PRICE PER UNIT
	10		50 ft. lengths - 3/4" 5 ply Steam Hose		
	2		500 ft. reels - 1/2" 5 braid Air Hose		
	2		50 ft. lengths - 1" 4 ply Sand Blast Hose		
	1		500 ft. reel - 3/8" 2 braid Welding Hose		

*And make sure it's all Hewitt W.F.S.*

*18783*

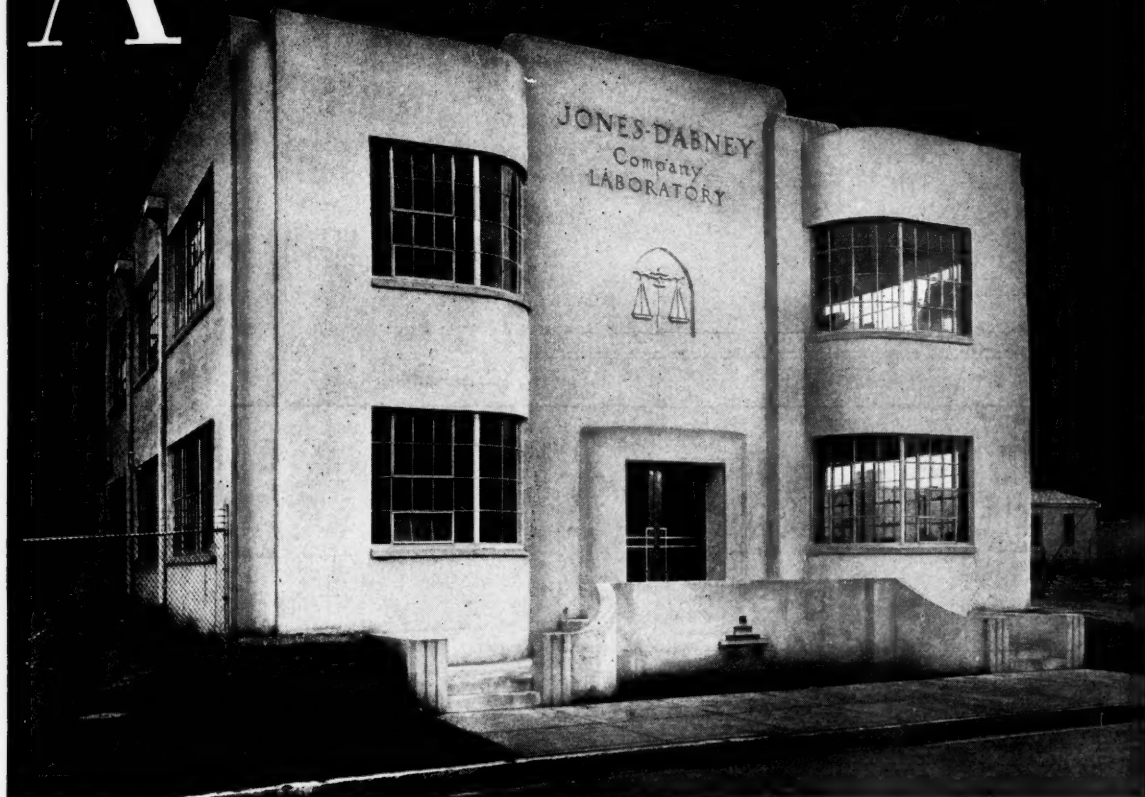
Recognized leadership is not born of advertising claims. In the industrial world leadership is the product of superior performance, proved in actual practice. That is the only reason HEWITT hose is the accepted leader throughout industry... the one reason why men concerned with production and operating costs, who compare costs, insist on HEWITT.

Dedicated to the production of industrial rubber goods, EXCLUSIVELY HEWITT is constantly and steadily linked with leadership, a recognition earned by the longer service of HEWITT products at lower cost. HEWITT distributors are nearby. They are listed in the classified telephone directories of industrial centers under "Rubber Goods" or "Belting".

## HEWITT

RUBBER CORPORATION, BUFFALO, N. Y.

# RAPID AS THE PROGRESS OF MODERN CHEMISTRY IS THE ADVANCE OF ARCHITECTURAL CONCRETE



*Distinctive . . . firesafe . . . economical . . . weather-defying . . . the new architectural concrete Jones-Dabney Company laboratory, Louisville, Kentucky. Nevin-Morgan & Kolbrook, architects and engineers. J. D. Jennings Co., contractor.*

**F**ORWARD-LOOKING business men, builders and architects are turning more and more to concrete for apt expression of the efficiency, vision and solidarity characterizing this industrial age.

Architectural concrete offers structural advantages and beauty that cannot be duplicated in any other material. A sound, fully service-tested building technique permits the casting of frame, walls, floors and ornament in *one* economical material. At very moderate cost you may now enjoy a new measure of architectural distinction, of firesafety and rugged permanence.

Your new office building, factory or home . . . your community's new schools, hospitals and other public

APRIL NINETEEN THIRTY-SIX

structures . . . are all well-adapted to Architectural Concrete. Ask your architect and engineer about the advantages of this new technique. Or write for one of our engineers to call.

*Let us send attractively illustrated booklet.*

## PORTLAND CEMENT ASSOCIATION

Dept. A4-21, 33 West Grand Avenue, Chicago, Illinois

Please send me "Beauty in Walls of Architectural Concrete."

NAME \_\_\_\_\_

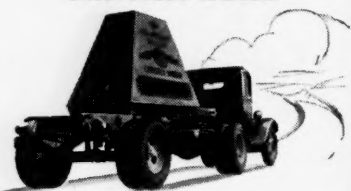
COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_



Coast-to-coast  
test run shows  
remarkable economy of  
Chevrolet trucks

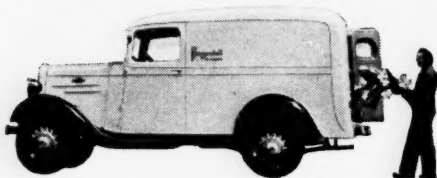


Location of Test . . . Los Angeles to New York  
Distance Traveled . . . 3511.5 miles  
Running Time . . . 129 hours, 24 minutes  
Average Speed . . . 27.14 miles per hour  
Gasoline Used . . . 308.6 gallons  
Gasoline, miles per gallon . . . 11.378  
Oil Consumption . . . 2 quarts  
Cost of Fuel . . . \$57.59  
Cost of Oil . . . \$.67  
Fuel and Oil (cost per mile) . . . \$.016  
Average cost per ton mile . . . \$.00328  
Water Consumption . . . 1 gallon  
No mechanical failures

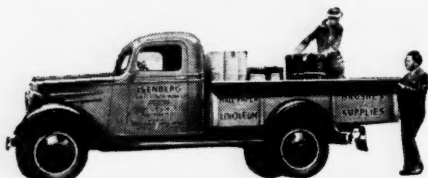
Entire test conducted under supervision  
of A.A.A. Contest Board—Sanction  
No. 3300.



Half-Ton Canopy Express—112-inch wheelbase



Half-Ton Panel—112-inch wheelbase



1½-Ton Open Express—131-inch wheelbase



1½-Ton Canopy—131-inch wheelbase

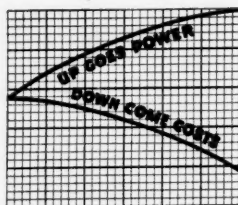


1½-Ton Truck—for trailer operation



FOR ECONOMICAL TRANSPORTATION

Fleet owner tells why  
**CHEVROLET TRUCKS**  
are preferred over all other makes



When a fleet of trucks averages over 8800 miles per day of heavy-duty haulage, the equipment must be *dependable*—and economical. That is why 40 of the 42 trucks owned by the J. W. Conner and Sons Construction Co., Tampa, Fla., are Chevrolet trucks. Read this company's own statement, made by J. W. Conner, Jr., telling why they prefer Chevrolet over all other trucks:

"We are operating 42 units, all of which are Chevrolets, with the exception of two. All are equipped with 1½-yard hydraulic bodies, hauling an average of 2¼ yards of dirt per trip. On the present job the trip average is six miles and we make 35 trips per day.

"We have, since 1927, operated practically all makes of trucks in our business, and our preference for Chevrolet is shown by the fact that we are 98 per cent Chevrolet equipped.

"By experience, Chevrolet trucks operate not only a great deal more economically but a great deal more consistently. We average better than 12 miles per gallon of gasoline. Oil consumption is confined to weekly draining.

"These are a few of the reasons why we recently added ten more Chevrolet trucks to our equipment."

Profit by this experience. Place one or more Chevrolet units in your fleet. Get the money-saving facts about Chevrolet trucks on your haulage or delivery work. Your Chevrolet dealer will co-operate in every way possible.

CHEVROLET MOTOR COMPANY, DETROIT, MICHIGAN

GENERAL MOTORS INSTALLMENT PLAN—  
MONTHLY PAYMENTS TO SUIT YOUR PURSE

Let your Chevrolet dealer  
prove the ability and economy of Chevrolet  
trucks on your haulage or delivery jobs . . .

MANUFACTURERS RECORD FOR

**T**HE MOST SPECTACULAR mine in South Africa's Rand is the Robinson Deep. The bottom of its shaft marks the deepest point penetrated by man beneath the surface of the earth.

At this depth, 8,380 feet, nature had hidden one of her richest veins of gold-bearing ore. And set on guard a terrifying blend of elements. Sizzling heat ... 100° to 120° ... ore almost too hot to touch ... humidity ... saturating damp.

With gold as the goal, nature was fought with her own elements. Air—cool, dry air—was the weapon. And oil, an offspring of nature—lubricating oil by Socony-Vacuum—aided in her defeat.

Came a strange silhouette to the African skyline. The biggest air-conditioning plant in the world was built. A 3,000-h.p. system with a cooling capacity of 4,000,000 pounds of ice. Fresh, cooled air was sent through a three-mile mine shaft.

This equipment was manufactured by the world's leading air-conditioning firm. With them Socony-Vacuum worked for several years in the development of suitable lubricants for motors, pumps, fans, blowers, refrigerating machines and control apparatus.

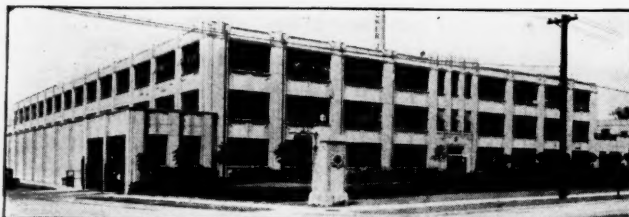
SOCONY-VACUUM's varied experience is being used advantageously today by every industry. Socony-Vacuum lubricants are renowned for their quality and uniformity—Socony-Vacuum's skill in applying them to your specific operating requirements is unsurpassed.

Human engineering—the knack of helping your own men devise vital efficiencies and worth-while economies—is one of the important reasons many plants follow this standing rule—"Talk with the Socony-Vacuum representative when he calls."



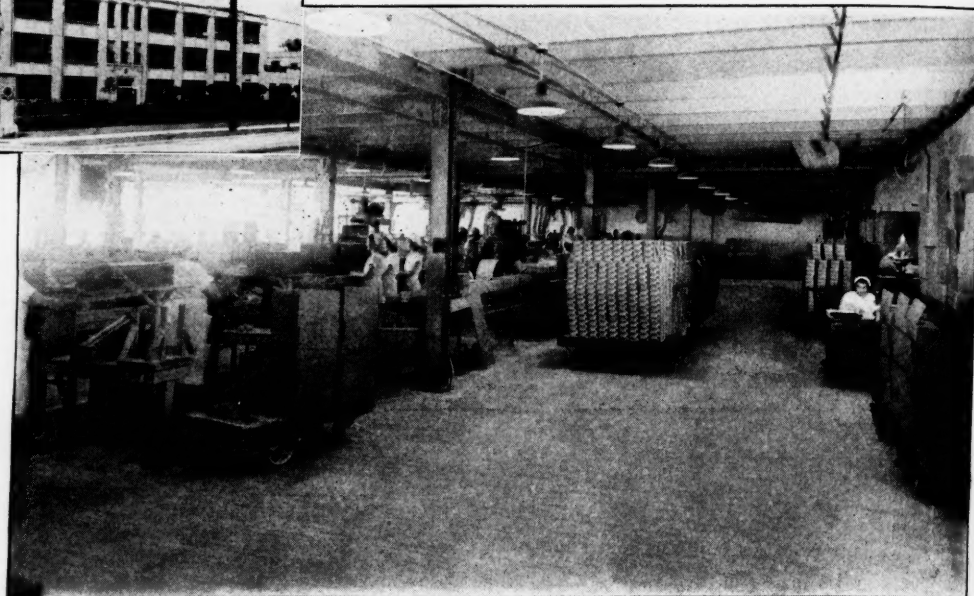
Black men carve yellow gold from hot rock with the aid of cool, dry air supplied by modern machinery correctly lubricated by Socony-Vacuum.

# A MILLION Sq. Ft. of Maple Flooring for CRACKER JACK!



*Cracker Jack's modern new plant in the Clearing Industrial District of Chicago described in this issue.*

*Rolling trucks help tons of Cracker Jack on its way to satisfy sweet tooth. But this floor can "take it"—for Hard Maple resists abrasive wear—does not develop ridges. Note the light-reflecting qualities of Hard Maple.*



**M**ILLIONS and millions of packages of Cracker Jack—one of the world's best-known confections—are produced yearly in this modern plant. Production must be fast, economical, and highly sanitary. Every factor must contribute to produce this high quality confection at lowest cost. With its years of manufacturing experience, it was logical that when building a new plant, The Cracker Jack Company should select Northern Hard Maple for the flooring—a million square feet in all!

There are definite reasons for this selection. This tough-fibred, tight-grained wood is remarkably resistant to abrasion—retains its smoothness through the years despite hard usage and the pounding of heavy trucks. Its smooth surface offers no lodging-places for dirt, making this flooring highly sanitary. It creates

no dust to injure the bearing surfaces of costly machinery. Resilient, warm and dry, it reduces fatigue, adds to workers' comfort and efficiency—and it simplifies plant alterations.

Further, when treated with the penetrating heavy-duty finishes available, Northern Hard Maple is kept clean merely by brushing—it minimizes maintenance and cleaning costs.

Plants of all types find these qualities of Northern Hard Maple equally important for their purposes. You can floor with Maple in blocks or strips, with or without pattern, over wood or concrete sub-floors, or over your present floor. Before building anew, or modernizing, be sure to investigate the many advantages of MFMA\* Northern Hard Maple.

Our "Grading Rules" book describes the various grades and gives standard specifications for laying and finishing. Write for a free copy.

**MAPLE FLOORING MANUFACTURERS ASSOCIATION**  
1797 McCormick Building, Chicago, Ill.

*See our catalog data in Sweets, Sec. 15/53. Let our service and research department assist you with your flooring problems. Write us.*

## Floor with Maple

\* The letters **MFMA** on Maple, Beech or Birch Flooring signify that the flooring is standardized and guaranteed by the Maple Flooring Manufacturers Association, whose members must attain and maintain the highest standards of manufacture and adhere to manufacturing and grading rules which economically conserve these remarkable woods. This trade-mark is for your protection. **MFMA**

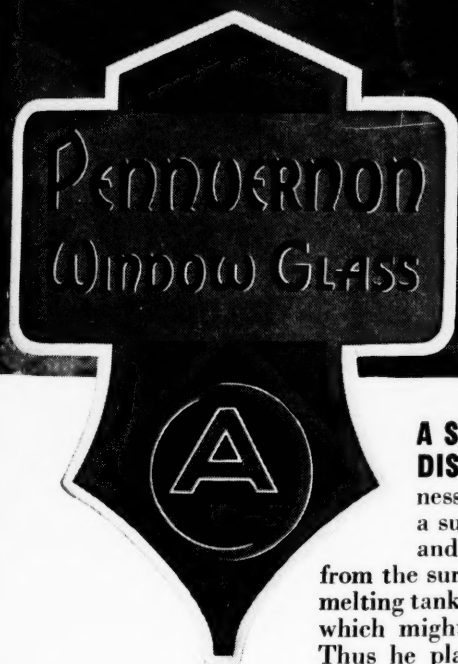
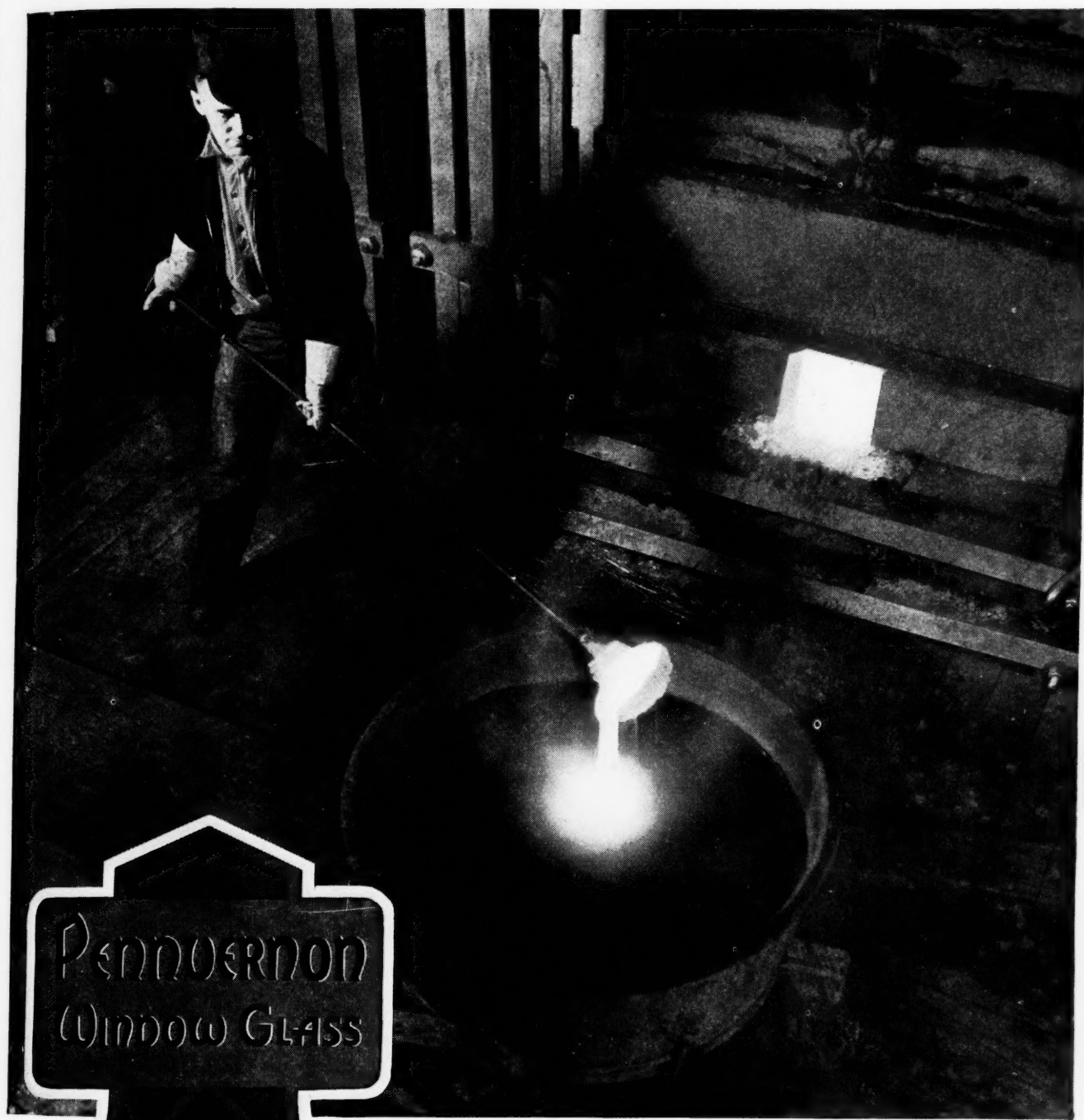
Look for it on the flooring you use.



*Another section of the million square feet of Northern Hard Maple flooring in the Cracker Jack plant.*



Use "Pennvernnon"...not just "window glass"



**A SPOONFUL OF GLASS FOR THE DISCARD.** A never-ceasing watchfulness through his tiny peephole door, a sudden swoop with his long ladle... and this Pennvernnon Craftsman dips from the surface of the molten glass inside the melting tank another stone or floating fragment which might reduce Pennvernnon's excellence. Thus he plays his part in the great process which has revolutionized window glass quality.

*Listen to "The Music You Love," superbly rendered by the Pittsburgh Symphony Orchestra and distinguished guest artists every Thursday at 8:00 P.M., E.S.T., over NBC-WJZ Network and associated stations.*

Our new booklet, called "The Making of a Leader", describes in dramatic pictures the manufacture of Pennvernnon Window Glass. To get your free copy of this interesting book, sign and mail this coupon to

**PITTSBURGH  
PLATE GLASS COMPANY**  
2148A Grant Building, Pittsburgh, Pa.  
Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

# PULLS LIKE A LOCOMOTIVE!

**Rugged New 1936 Reo Truck Built to "Take It" In Rough Going**

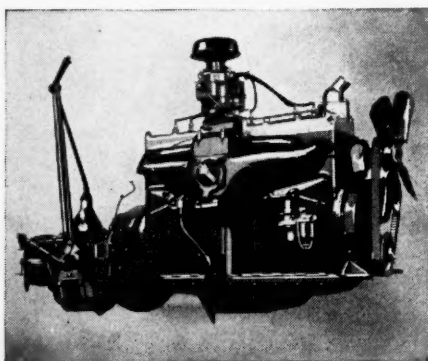


"You need real power—stamina—rugged dependability for profitable pay-load hauling! You'd hardly expect it from a passenger-car engine. Get a tough truck motor designed, engineered, and built for the job. Get a new 1936 Reo—with one of the sturdiest, most capable truck engines ever built for commercial service. A he-man truck with a he-man motor—built to 'take it'!"

**\$445\*** AND UP

*America's Toughest Truck!*

Reo Speedwagons and Trucks range from ½ to 4-6 tons including Tractor-Trailers and Buses. Prices from \$445 up, chassis f.o.b. Lansing, plus tax. Special equipment extra. Prices subject to change without notice. \*½-Ton Chassis f. o. b. Lansing, plus tax.



Look to the engine for a truck's real worth! Reo's famed Gold Crown and Silver Crown engines have greater bearing area and larger crankshafts than most trucks of even higher price. That means longer life, less vibration, higher compression—more value for your money! Get the facts.

**G**ET behind the wheel of the new Reo truck—step on the gas and feel it leap away with a capacity load! Man alive, here's power—enough to haul a line of freight cars with ample reserve! And month after month these Reos stand up and "take it"—no matter how tough the going!

Truck-wise men rely on the rugged, attention-free dependability of the new Reo Gold Crown and Silver Crown engines. Money-savers too, these motors. They use less gas—

less oil—perform better. And they stay on the road—out of the repair shop!

Sturdy, 7-bearing crankshafts on all heavy-duty models assure quieter operation, longer wear. Optional are 5-speed transmissions, 2-speed rear axles and double-reduction axles that provide high speed at low cost on the straight-away and extra power when and where it's needed.

Get the facts first hand from your nearest Reo dealer. Let him prove to you, that Reo will give you most for your truck dollar!

**REO SPEEDWAGONS AND TRUCKS**

MANUFACTURERS RECORD FOR

# GULFCREST

THE MOST STABLE TURBINE OIL OBTAINABLE . . .



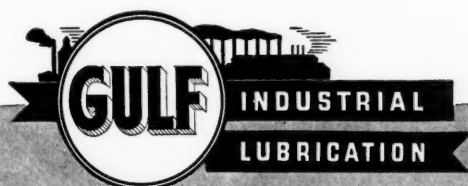
## HERE ARE **4** IMPORTANT REASONS WHY GULFCREST OIL IS THE TURBINE LUBRICANT OF UNPARALLELED QUALITY

**1** GULFCREST OIL *is refined by the ALCHLOR process.* This famous process, patented and owned exclusively by Gulf, is the most thorough and effective method for removing chemically active hydrocarbons as well as the general run of impurities present in all crudes.

**2** GULFCREST OIL *has highest resistance to acidity and sludge.* Because of the elimination of oxidation catalysts in addition to the unparalleled refining power of the ALCHLOR process, these oils form less gum and deposits, less emulsion and sludge, when mixed with water over a period of several years' continuous operation, than any other turbine oil of which we have record.

**3** GULFCREST OIL *has highest resistance to oxidation.* Because this famous ALCHLOR process synthesizes and rearranges the molecular structure of certain hydrocarbons, resulting in a finished product of greater stability, GULFCREST OIL stands alone in its high resistance to oxidation.

**4** GULFCREST OIL *gives highest kilowatt-hour performance.* Because ALCHLOR not only makes possible an oil more thoroughly refined and homogeneous but also creates antioxidants, these oils have great resistance to deteriorating influences and are longer lived. Less make-up oil is required.



**GULF REFINING COMPANY, Pittsburgh, Pa.**

Boston      New York      Philadelphia      Atlanta      New Orleans  
Houston      Pittsburgh      Louisville      Toledo

**MAKERS OF THAT GOOD GULF GAS AND GULFPRIDE MOTOR OILS**



# ALL OPERATIONS AT ONE BIG PLANT



ANNEALED WIRE  
GALVANIZED WIRE  
GALVANIZED SHEETS  
CORRUGATED SHEET  
WELDING RODS BA  
NAILS STAPLES SP  
BLACK SHEETS ROD  
BRIGHT WIRE BALE

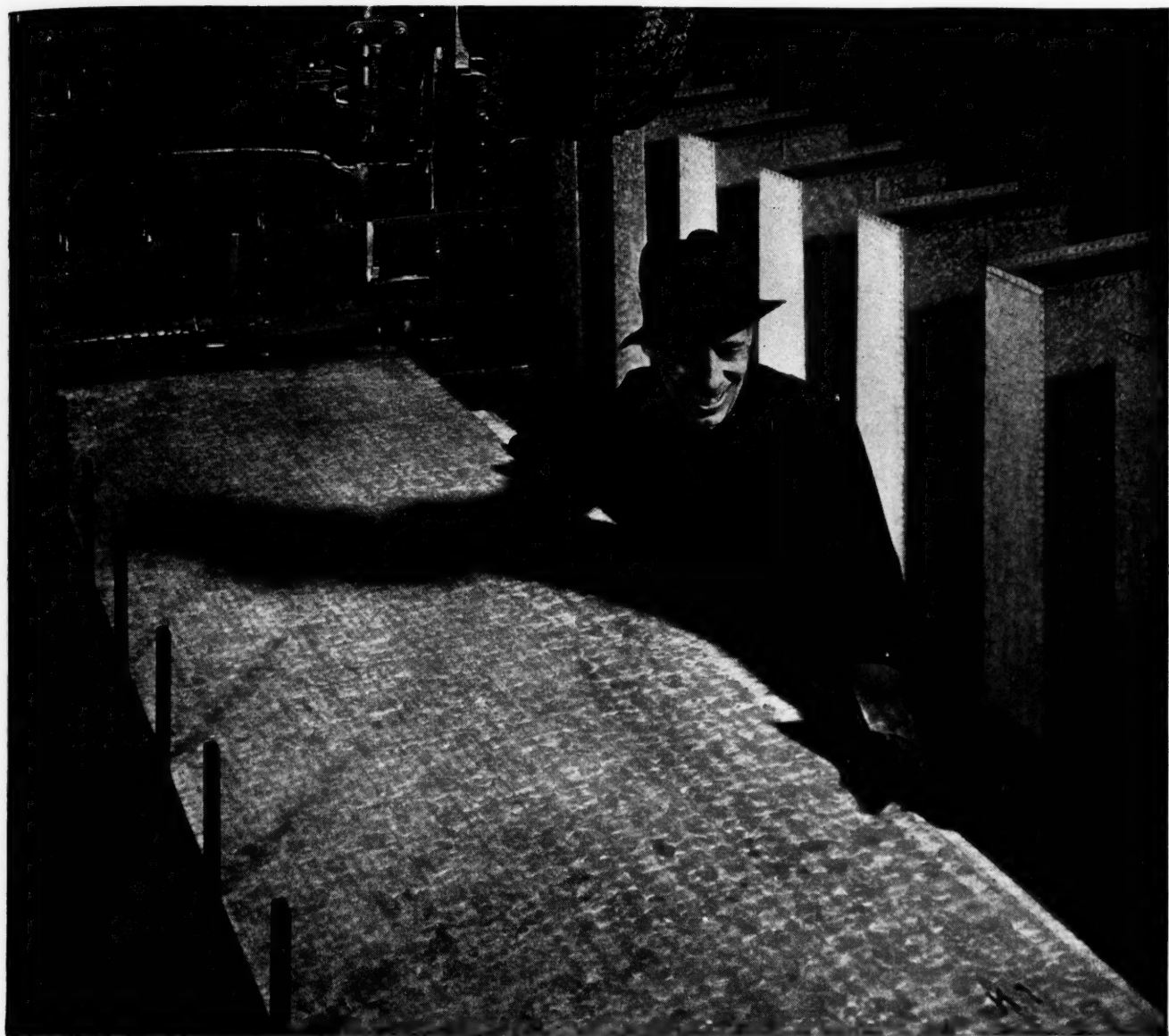
TS BILLETS SLABS  
PLATES SHAPES  
LOOMS TIE

WHATEVER your steel needs,  
try GULFSTEEL first. Unified control  
at one big plant (largest Southern  
independent steel company) enables  
GULFSTEEL to offer you a more per-  
sonalized service and quick delivery.  
Send us your inquiries ... Gulf States  
Steel Company, Birmingham, Alabama.

... MEANS QUICKER SERVICE  
WHEN YOU ORDER FROM

**GULFSTEEL**  
*The Steel with* **PERSONALITY**

# ...even Tony smiles



**T**ONY is one of those genial craftsmen who has been working with steel sheets for years. He has handled thousands of them . . . he doesn't understand a chemical analysis or metallurgical statement . . . but *he knows good steel sheets!* He knows that certain makes of steel sheets are better, because of their splendid working qualities.

So when Tony sees the mark designating a steel sheet made by the United States Steel Subsidiaries . . . he smiles his approval. In this particular case he knows the galvanized coating has been properly applied . . . that it is uniform and tightly adherent . . . and that the base metal is from sound steel.

These are some of the very good

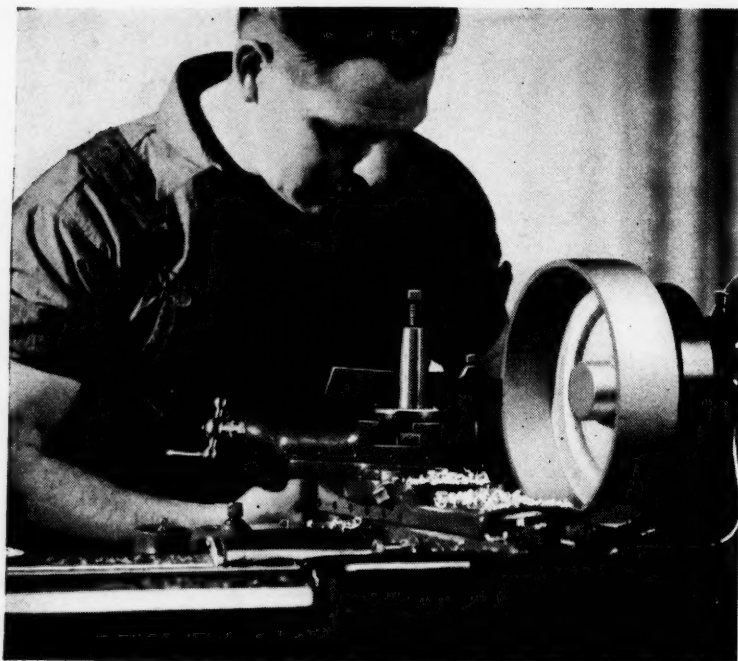
reasons why you should specify steel sheets made by the . . .

AMERICAN SHEET AND TIN PLATE COMPANY, Pittsburgh • TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham • COLUMBIA STEEL COMPANY, San Francisco.

Export Distributors: United States Steel Products Company, New York



## UNITED STATES STEEL



# SKILL WAS BEGOT IN A THOUSAND SHOPS

★ **FIFTY YEARS** ago this spring all the commercial Aluminum in the world was represented by a few shining pellets in the hand of young Charles Martin Hall.

Fifty fleeting years — and men who actually saw the first pouring of Aluminum by Hall and his commercial associates see trains made almost wholly of Aluminum, setting speed records on the tracks of American railroads.

The skyways are full of Aluminum airplanes. Along the highways roll huge motor trucks and buses with light Aluminum bodies. Bridges, armored cars, power-shovel dippers, office chairs, building facades are rapidly "going Aluminum."

How could, how did, Aluminum grow up so fast?

Because it was mastered by the skill, the resources, the ingenuity of the men who are the metal-working industry.

Bit by bit, quirk by quirk, process by process, in a thousand shops, large and small, famous and obscure, Aluminum was made useful by men who refused to be baffled by the different working characteristics of this new metal.

It would not have been surprising if these men had argued that the older metals were good enough. They knew each of these stand-bys like a book. The knowledge of copper dates back at least to 3700 B. C.

The history of lead goes back nearly as far; lead pipe was common in ancient Rome. Iron is as old as the hills themselves. Zinc coins antedate the Christian era.

Nor would it have been surprising if, when engineers had instigated the development of new, stronger and tougher alloys, the metal-working industry had wavered in its enthusiasm.

On the contrary, the interest grew, and skill with it. For these men who knew metal saw that Aluminum was capable of doing things no other common metal could do. They recognized these capabilities as the heritage which makes Aluminum not a competitor but a co-worker in the great family of common metals.

So came, with the help of the metal-working industry, our modern knowledge of how to work Aluminum — to roll it, cast it, forge it, weld it, extrude it, heat treat it. So have come our railroad trains and airplanes, and all the other applications where Aluminum serves mankind better.

And while all this practical knowledge was accumulating, this company, as one factor in the Aluminum industry, has been at similar problems in its Research Laboratories, so that it might be well prepared to return the compliment to the metal-working industry in the form of helpful and practical suggestions based on exhaustive scientific research.

A FIFTIETH ANNIVERSARY MESSAGE FROM

ALUMINUM COMPANY OF AMERICA  
MANUFACTURERS RECORD FOR

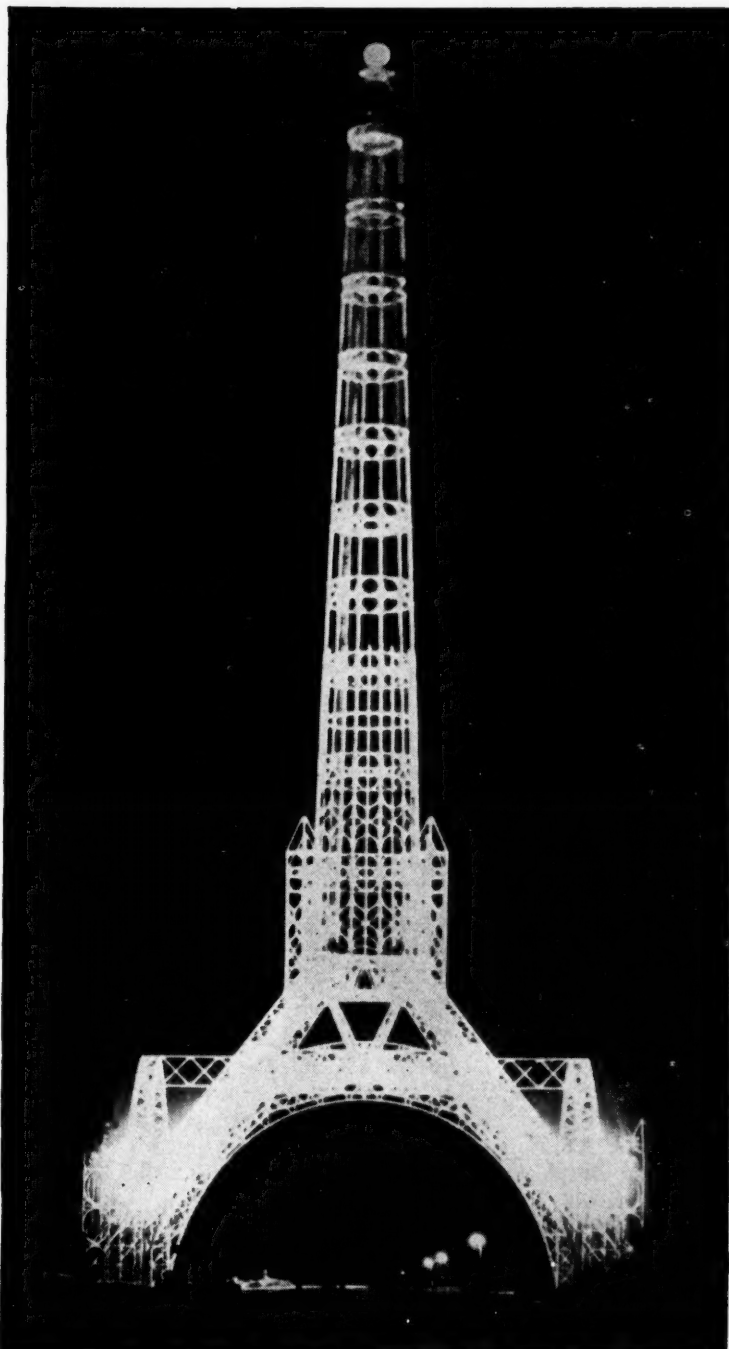


# A MILEPOST OF STEEL

## *on the Sands of Time*

**T**HE hundredth anniversary of the birth of General Justo Rufino Barrios, famous Guatemalan patriot, is signalized by this beacon and bell memorial tower over the intersection of the Boulevard 15 de Septiembre and the Calle Miguel de Granados, Guatemala City, Central America.

It may be unusual but quite fitting for a modern land to erect memorials of steel, a newer material of known strength and long life, adaptable to any construction purpose or esthetic treatment. The entire job of design, fabrication and erection was given to American Bridge Company because of the wide experience of their engineers in all kinds of structural steel-work. Plain material was rolled by the Carnegie-Illinois Steel Corporation.



(Above)—Visible at night throughout Guatemala City, this floodlighted 246' galvanized tower stands on four legs centered 104' apart, leaving an arched roadway 82' wide and 39'4" high for the passage of vehicles in four directions. The base structure rises 64'6", the lower ends of the legs being supported and protected by four corner pylons 31' high.

(At left)—Looking up into the twelve-sided shaft towards the bell, observation walk, and 3,000,000 candlepower revolving beacon light.

AMERICAN BRIDGE COMPANY, Pittsburgh, Pa.,  
CARNEGIE-ILLINOIS STEEL CORPORATION, Pitts-  
burgh, Pa., Chicago, Ill., TENNESSEE COAL, IRON &  
RAILROAD COMPANY, Birmingham, Ala.

Pacific Coast Distributors: Columbia Steel Co., San Francisco  
Export Distributors: United States Steel Products Company,  
New York



# UNITED STATES STEEL

# THE SOUTH CONTRIBUTES TO NEWEST DEVELOPMENTS IN AMERICAN INDUSTRY

*If interested in any phase of Southern opportunities and resources—write us for further information.*

MANUFACTURERS RECORD  
Baltimore, Md.

**T**HE recognized importance of the annual BLUE BOOK OF SOUTHERN PROGRESS printed for more than twenty-five years is epitomized in the following from a leading business executive—

It contains such information as is needed from day to day and there is hardly a week in the year that I do not refer to it concerning some proposition.

Through our continued publication of facts and figures on the South's actual and potential resources and wealth-producing opportunities, this section has become recognized as the *Nation's Treasure Chest*. Manufacturers the nation over are closely studying the South's unusual combination of products from mines, forests and farms; its climate and abundance of native labor; its power resources and transportation.

Many still look on the South as primarily agricultural, while as a matter of fact the value of manufactured products made in the Southern states far exceeds the dollar value of agricultural products. Comparing 1909 with 1933, the South's increase in value of manufactures is 94%; the United States' increase being 52%.

	South		United States	
	1909	1933	1909	1933
Agriculture .....	\$2,993,990,000	\$2,914,000,000	\$8,494,230,000	\$8,264,000,000
Manufacturing .....	3,158,389,000	6,122,568,000	20,672,052,000	31,358,840,000

Southern agriculture faces a greatly improved outlook through diversification and modern methods. Farms and forests are making increasingly important contributions to newest developments in American industry.

An important establishment uses in its various manufacturing processes the cotton yield of 100,000 acres. Its use of cotton linter represents a linter yield of 2,175,000 acres and cottonseed oil yield of 18,000 acres.

Thousands of acres of Southern pine trees and stumps are furnishing one establishment 6,500,000 pounds of turpentine and rosin for synthetic materials used in the manufacture of motion picture films, paints, varnishes and many modern merchantable products. The domestic

paper industry is drawing heavily on the South for its raw materials. The pine forests are furnishing the material for both printing and wrapping paper. The South is capable of producing twenty times the annual pulpwood requirements of the United States. The South has led in the manufacture of kraft paper and boxboard for some years. Research has proven the feasibility of using Southern pine for the manufacture of the highest grade newsprint paper and super-cellulose required for the manufacture of rayon. Southern plants are producing paper-making chemicals.

The motor vehicle industry calls upon the South for important basic materials. Every new automobile requires an average of 100 pounds of cotton. From the lowly soy bean, at the outset raised solely for forage in the South, are produced various things from horn buttons to oil for mixing with paints and finishes. Until recently, camphor was one of our essential commodities available only from abroad. Today, a large part of the camphor consumed in this country is synthetic camphor, made from turpentine produced in the Southern states. Tung oil production in the South is one of America's newest industries. It is expected that this will make us independent of the foreign product now used in the manufacture of paint and varnish. New chemical by-products from the South's vast supply of petroleum, natural gas, coal and salt are among other of the South's contributions to modern methods of production.

In tabulated form as well as in descriptive articles and illustrations based on authoritative information, the 1936 BLUE BOOK OF SOUTHERN PROGRESS will point out to manufacturing industries of the nation, the wealth-producing opportunities of the South. It will emphasize the interdependence of agriculture and manufacturing, which must advance together to bring about a sound basis of sustained prosperity for the nation, resulting in larger and profitable employment of labor and raw materials.

Over a period of years the facts, figures and interpretations in the BLUE BOOK OF SOUTHERN PROGRESS have been accepted by many manufacturers as a guide in the location of new and branch plants which could profitably employ the favorable advantages the South offers.

THE BLUE BOOK OF SOUTHERN PROGRESS is unlike any other reference publication in its complete coverage of all the needed facts on the sixteen states of the South and Southwest.

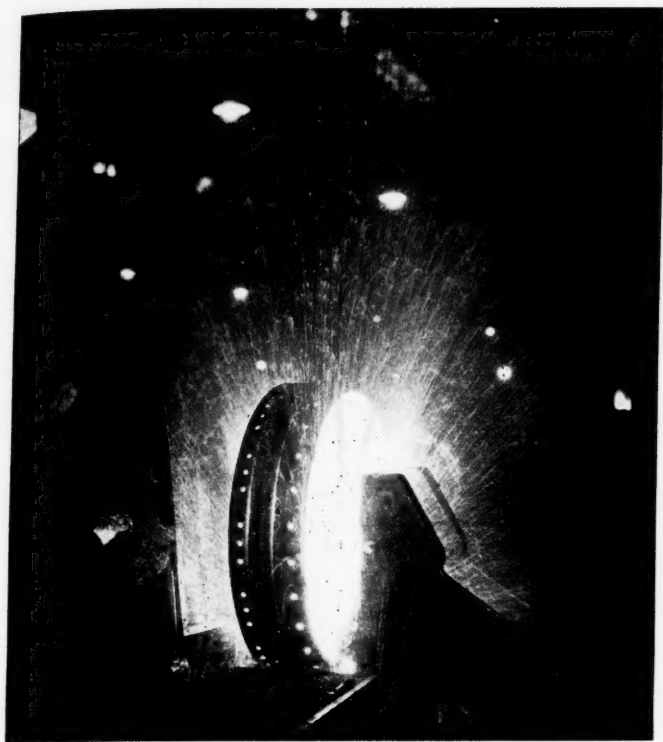
The 1936 issue will be ready about June 1, 1936.  
50 cents a copy

Advertising rates on application.

## BLUE BOOK OF SOUTHERN PROGRESS

MANUFACTURERS RECORD PUBLISHING CO.

BALTIMORE, MD.



## KEEPING THE WHEELS TURNING

Operating units in the Commonwealth & Southern system have maintained their properties at high states of efficiency, made adequate capacities available, extended lines in urban and rural territory, and have made possible the benefits of broader use by substantial price reductions. This is nothing new; these are policies of long years' standing in an industry with its mind on its work and its eyes on the needs of customers and communities.

Thus, the wheels have been kept turning against the resistance of a serious world-wide depression. In addition, the whole utility industry has been exposed to the destructive force of indiscriminating political attacks. That the industry could

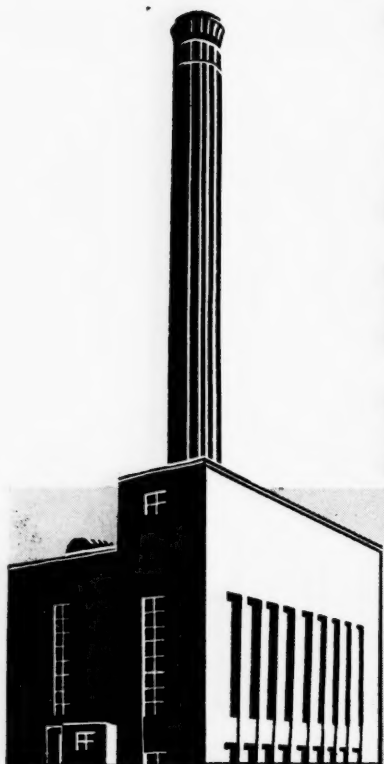
make much greater contributions to recovery and public progress, if freed from the threats of "death sentences," tax-subsidized competition, and governmental interference, is well known. Estimates indicate some three billion dollars, in constructive expenditures, could presently be made, by this and correlated industries, were these unreasonable factors modified.

American industry—which is but a symbol for employment, work, wages—cannot risk its operations and its future, subject to politically influenced power and light facilities. These things are an integral part of the nation's economic structure—and can only serve you properly when administered under able, experienced and responsible management.


## The COMMONWEALTH & SOUTHERN CORPORATION

MICHIGAN - OHIO - ILLINOIS - INDIANA - PENNSYLVANIA - GEORGIA - FLORIDA - MISSISSIPPI - SO. CAROLINA - ALABAMA - TENNESSEE





# WHEN YOU ARE BUYING BOILER PLANT EQUIPMENT

You will find it profitable to  
consider  equipment... selected  
by companies such as **THESE**

**I**T IS reasonable to assume that recent boiler plant installations of outstanding companies, such as those listed opposite, are producing steam for power, process or heating requirements at the *lowest possible cost*.

All of the companies listed and many other leaders in various fields have selected CE boiler plant equipment for installations completed within the past two years or now on order. These installations range from a small stoker and boiler costing a few thousand dollars to a large steam generating unit representing an investment of over a million.

Note the list of CE equipment below. It provides adequately for all steam production requirements except domestic—from 30 hp boilers and small stokers up to the largest steam generating units\* in the world. It is the most extensive line of such equipment in the field. It enables you to buy any type or size of boiler, fuel burning and related equipment on one contract with but one company responsible for its satisfactory operation.

Whether your steam requirements are large or small, you will assure a maximum return on your investment by specifying CE equipment.

\*CE units at East River Station, New York Edison Company.  
Have operated at rate of 1,270,000 lb of steam per hr.

**COMBUSTION ENGINEERING  
COMPANY • INC.** 200 MADISON AVENUE, NEW YORK  
OFFICES IN PRINCIPAL CITIES

Canadian Associates: Combustion Engineering Corporation, Ltd., Montreal

MANUFACTURING DIVISIONS: The Hedges-Walsh-Weidner Company, Chattanooga, Tenn.; The Raymond Brothers Impact Pulverizer Co., Chicago, Ill.; Heine Boiler Company, St. Louis, Mo.; Coshoccon Iron Company, Monongahela, Pa.

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CARNEGIE-ILLINOIS STEEL  
CHRYSLER  
WESTINGHOUSE  
FIRESTONE  
HERCULES POWDER  
REPUBLIC STEEL  
CARBIDE & CARBON  
INDUSTRIAL ALCOHOL  
ROCHESTER GAS & ELECTRIC  
VISCOSE COMPANY  
CONTAINER CORPORATION  
AMERICAN GAS & ELECTRIC

## CE PRODUCTS

*All types of*

BOILERS • STOKERS • FURNACES  
PULVERIZED FUEL SYSTEMS  
HEAT RECOVERY EQUIPMENT

Fabricators of pressure vessels, tanks, towers,  
etc., welded or riveted in carbon,  
alloy or clad steels

# • Manufacturers Record •

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## WHERE ARE WE HEADED?

**T**HOSE most deeply concerned about the progress of America are not the politicians, nor the jobholders who view it from the political angle, but the employers — men responsible for industry and investments. It is upon them the burden rests. Upon their work and decision depends mainly the well-being of the country. They face a situation which confuses the wisest.

When not actually accused of wrong-doing, they are regarded by government as suspects whose methods must be revised to meet New Deal ideas. Yet the progress of America in virtually everything has resulted from its great industrial progress.

Industry, paying 80 per cent of the taxes, has made our unequalled educational system possible, has endowed our hospitals; brought living standards here to a higher plane than anywhere else on earth. Now it faces taxation to a degree that is punitive and devastating. It is confronted with laws that hamper its development and with obstructions thrown in its path by theorists to whom practical industrial effort is unknown.

The question that pushes to the front in the maze of doubt and fear created by an autocratic government which enters into and regulates so many individual activities while spending money at a rate beyond anything known, is, what does it all mean? Why is America stopped from pursuing a normal course of progress that would come about if business were left free to supply the pent up demand that exists?

The fact is it is not free and it has grave doubts of the future, and yet it is told unless it employs more men the bill for relief will grow and remain as a constant cause of still higher taxes.

In the minds of men who try to think in simple terms, despite the conglomeration of ideas and propaganda put out by press agents who are in Washington in swarms, the question of what the scheme is, what is it all about, becomes more and more insistent. Is it the redistribution of wealth? Is it a Socialistic State? Those who would divide property, as far as such a division might be possible, between those who have and those who have not, surely have sufficient intelligence to realize it would prove a never ending process to be repeated at frequent intervals.

It becomes clearer every day in this process of "re-making America", which has been advocated by some in high office, that unless some permanent reassuring

basis on which this country may go ahead is adopted, the depression will continue longer than most of us like to think about. We are well into the seventh year of it and business still asks for reassurance of a definite, sane course. It reads of the grandiose schemes that would implant government competition in fields where government has no place and concludes that at Washington the functions of government are gravely misunderstood.

Intelligent, liberty-loving Americans recognize that their interests now and in the future are brought definitely into question by most of the weird ideas so far advanced which are clear only in one aspect—they are putting the bill for taxes beyond anything known.

The responsibility of industry in creating and saving surpluses has been for the safety of investments that they might remain safe through periods of prosperity and depression. There are comparatively few such surpluses in cash. Most of them are in bricks and mortar and machinery—assets not divisible except by liquidation. Now it looks as if all who have any part in business responsibility, are to be penalized.

As this is written, the newspapers are filled with pictures of distressing flood scenes from inundated towns in 13 states. Rescuers and refugees forced to use boats and improvised rafts to reach places of safety. A striking thing about these pictures is the number of people, under horrible and dangerous circumstances, with smiles on their faces.

Along with the pictures are press accounts of rehabilitation started immediately. The problem was concrete, definite, although cataclysmic. There was work to be done. Stark reality faced those who saw their homes and possessions wiped out, but self reliance came immediately to the front as always in this country when a disaster can be visualized.

The economic situation, however, presents a puzzle of conflicting influences that leave business groping and in doubt. There is an overlordship that puts a damper on initiative.

Hesitation is shown in following rules of the past, because government has entered into the planning with proposals for the "more abundant life" and "free social cooperation". These require new rules to which it appears business and everybody else must become accustomed.

# NEW FRONTIERS

**A**T a time when industry needs encouragement, the South presents an outlook and an opportunity that appeal to the thoughtful and are causing detailed study by industrialists the country over. Henry Ford has said that there are fifty times as many opportunities today confronting the young men of energy as existed in his youth. Instead of vanishing frontiers, which we were told a short time ago was a condition the country faced, even a casual study of facts will convince a doubter that there is a greater wealth of opportunity here for those who are willing to work than we have before known.

The work of the scientist in the prolongation of human life, in the betterment of living conditions, in the accomplishments of the surgeon and the engineer, is beyond all praise.

Results in the field of industrial chemistry are equally striking and provocative of renewed determination to carry on America's forward march, despite handicaps and obstructions that have temporarily acted as a damper on individual initiative.

The Southern states are responsive to this effort, because here we find ideal conditions of soil and climate and resources that have prepared this section for our greatest advance in the practical realization of the chemists' ambitions.

Industry is responding to this creation of new wealth to a degree not before seen, and not only is this true among Southern organizations, which are furthering plans of the greatest encouragement to those whose privilege it is to promote Southern industry and agriculture, but manufacturers and investors from all parts of the country are giving Southern industrial advantages and opportunities close study.

The forthcoming issue of the Blue Book of Southern Progress brings these facts to mind, because in assembling the data and reports from all sections of the South for this annual work that deals comprehensively with Southern resources, it is apparent that there is more interest of a practical kind being taken in the utilization of wealth that has lain dormant, than ever has been the case in the past.

This is true in the lumber industry which today, through its organizations, is fully mindful of the great possibilities of a wider utilization of Southern pine in chemical processes. Not only with pine, but in the improvement and conservation of the production and markets of Southern hardwoods from the mountains to the bottomlands of the Southern states, there is shown an intentness and a desire to do more with lumber than ever has been done. Fabricated houses, to compete with the work being done with other materials, are receiving close attention. Organizations are actively studying how best to preserve and utilize and perpetuate the great hardwood forests of the South, where there is more than 50 per cent of the hardwood standing timber of the United States. The

value of its pine, aside from its building uses, is stressed for the manufacture of woodpulp for newsprint, as well as for white paper of book quality and also better grades.

Recently there have been established pulp and paper plants costing \$13,000,000, and in addition, a new one is projected for Fernandina, Florida, and two others are expected to be built along the Atlantic Seaboard. One mill will consume 10,000 cords of pine wood daily.

The South is capable of producing many times the annual pulp wood requirements of the United States. It has led in the manufacture of kraft paper and boxboard for many years.

Research has demonstrated not only can there be made the highest grade of newsprint from Southern pine, but super-cellulose which is required for the manufacture of rayon.

Studying the vast opportunity that agriculture has in cooperation with the chemist, the imagination is staggered.

Cellulose, from which such marvels have been wrought, comes from the products of the field. One establishment uses annually in its various manufacturing processes the cotton yield of 100,000 acres. In making each automobile an average of 100 pounds of cotton, which is one-fifth of a bale, is used.

The soy bean, which the South raises in abundance, is a source of material for a variety of products from horn buttons to oil, while the camphor which we always bought from abroad, now is synthetic camphor made from turpentine produced in the Southern states. The list is getting longer every day.

Tung oil is being produced in larger and larger quantities. We formerly bought our entire product from the Far East. Now we are growing tung trees in the Southern states and the oil from this tree is used extensively by paint and varnish manufacturers, as well as in other products.

In addition to the raw materials taken from field, forest and mines, to be made into articles of commerce, large investments are being made in chemical industries to supply further materials needed in the process of manufacture. To produce one pound of rayon it takes almost two pounds of caustic soda. As the manufacture of rayon has grown apace, there has been invested \$30,000,000 in new alkali plants in the Southern states.

The naval stores industry is undergoing a revival which is manifested through its organizations that will foster the interests of the farmer who supplies from his trees the turpentine that goes so largely into naval requirements. He will be brought into a cooperative movement to teach him better methods of obtaining his crop under proper conditions so as to prolong the life of the tree and get the most for his efforts.

Thousands of acres of Southern pine trees and stumps will be required to furnish one establishment 6,500,000 pounds of resin and turpentine annually for synthetic materials used in the manufacture of motion picture films, paints and varnishes.



In the coal industry of the South research work is continuous, as in other sections, to bring about better combustion, and now there is the promise that even the residue of ash from coal fires will be consumed.

Petroleum, natural gas, coal and salt are destined to yield still greater wealth through chemical research.

The awareness of this, shown every day in the construction reports the MANUFACTURERS RECORD receives from all over the South, affords the greatest encouragement and stimulation to further effort.

Old frontiers, typified in the minds of some by scenes of the old West, have disappeared, but there are new ones that beckon to America and are just as appealing and more so, in the possibilities they offer for the improvement of life.

There is more reason today for young men in the South to remain at home to help in the development of their own section where opportunities abound, than there is to let their fancy roam elsewhere in the belief that other pastures are greener and greater achievement is possible in other fields. It may be said very definitely to the young men of the Southern states, while it was estimated a few years ago that 5,000,000 men left the South to make their way in other parts of the world, there can no longer be a justifiable urge of this kind. There are opportunities at home which the scientist has uncovered of a variety and of such promise as were never before dreamed.

## PENALIZING INDUSTRY

OUR stupendous public debt will necessitate staggering taxes before it can be paid. Whether the money has been wisely or unwisely spent; whether multitudinous bureaus have wasted it by chaotic planning in asking for billions more than necessary, the debt must be paid if government credit is to be maintained.

In order to pay this biggest accumulation of debt in our history, the greatest load of taxes this country has known must be faced. To hide the fact, which vitally concerns all the people, may serve a political purpose in election year, but it is doubtful if that will postpone, except for a brief time, the awakening of those who now may be in ignorance of what is going on and the inevitable attendant consequences.

It would seem to be the part of wisdom that business, as the greatest taxpayer, should be afforded every encouragement to go ahead with its work without fear of more government competition or stifling regulations. Instead of that, present plans indicate that a further load will be inflicted upon this tax paying source and that it will have to pay heavily, notwithstanding it must be relied upon for recovery.

The plan now seems to be to make industry pay, according to its size, upon undistributed surplus and also to hire more of the idle, or the bill will be larger later on. Government having failed of its purpose, despite the billions of taxpayers' money thrown about wildly, and with the unemployed list virtually where it was, industry is told in the face of threats that are confronting it, which destroy confidence, that if it

does not take up a large part of the slack in unemployment, the bill next year will be greater still.

It seems to be the purpose to pick upon the most prolific source of revenue—the source upon which progress now and in the future rests—to hamstring it. Business is better because demand is more insistent, but it is impossible to get business to move with the freedom and energy and push necessary to restore anything like normalcy until it has the assurance of cooperation of a sane government bent upon progress along right lines, instead of an apparent purpose to take from those who have and give to those who have not.

## \$1,300,000 FOR COTTON FABRIC HIGHWAYS

THE use of cotton membrane for reinforcing surface treated low-cost highways, is engaging the attention of road-building officials and engineers. The Department of Agriculture has offered to provide the State Highway Departments, without cost, the necessary cotton material to construct 1,000 miles of "cotton roads" this season.

South Carolina, one of several states which cooperated with the Cotton Textile Institute in building the first cotton road in 1926, ever since has been continuing its efforts to perfect the fabric, as well as the necessary construction technique. More recent experiments in several other states, including New Jersey, Georgia, Mississippi and Texas, have furnished convincing proof of the engineering soundness and maintenance economy of the cotton road principle. These results prompted the offer of the Department of Agriculture.

The fabric to be supplied by the government may be utilized in state-supervised county road projects, with the stipulation that the experimental roads shall be built adjoining unreinforced sections having similar soil and drainage conditions in order that accurate comparative checks may be possible.

The Department of Agriculture has set aside \$1,300,000 to demonstrate the practicability of the material for wear resistance and economical upkeep.

The Bureau of Public Roads, cooperating with the highway departments of several Southeastern states, will supervise the building and maintenance of at least 50 miles of bituminous surface roads reinforced with cotton fabric.

In the first three states to proceed with construction under these allotments—North Carolina, South Carolina and New Jersey—there will be used 1,650,000 square yards of fabric 74 to 78 inches wide. Tentative plans call for reinforcing 50 miles of such road each in New Jersey and South Carolina, and 40 miles in North Carolina.

Another part of the program calls for the use of cotton mats in curing concrete pavements.

The indications are favorable to the opening of a new and important outlet for cotton, and in these experiments alone 12,500,000 square yards of fabric will be required.

# EXPRESSING INDUSTRY'S VIEWPOINT

## Leaders Give Statements About Future Progress

As America, through the working of natural forces, emerges from years of depression, the statements we are printing by leading industrialists about the situation in which business finds itself and the opportunity for further progress, are of particular interest.

T. M. Girdler, Chairman of the Republic Steel Corporation, asks a question in the minds of many—"Will these forces be permitted to carry through, or will they be hampered by burdensome taxes upon business and other political uncertainties? The great need of business is confidence."

It is a time to take stock of facilities and revamping them to a point of higher efficiency and economies. While as N. F. Russell of the United States Pipe & Foundry Co. points out—"This is work that unquestionably has not been done in the vast majority of cases and should furnish a considerable backlog of building. That this action is being taken is evident from the general news."

In the face of what are described by Chester H. Lehman, Vice-President of Blaw-Knox Co. as "jungles of tangled economics," he sounds an optimistic note in his statement when he says—"On the positive side we know through experience that the American public will absorb almost any number of new or improved products in amounts which are at many times greatly in excess of any predicted saturation point."

We discuss elsewhere the thought of new frontiers and where they are to be found. Industry is eager to surge ahead. The demand exists and the job of meeting it will tax industrial plant facilities when present day restrictions are cast aside. Some of the things that industry has a right to expect are set down in the statements that follow.



### On Threshold Of New Industrial Era

By

C. M. Chester

President, National Association of Manufacturers,  
Chairman of Board, General Foods Corporation

**T**HE genius of American industry is that it has developed out of its own initiative and resources. The principal characteristic of American industry has been free competition, the reward to genius in invention and organization, and the recognition that every man with an idea and a will to labor can start from the bottom and reach the top. It is interesting to scan the names of the leading manufacturers of this country today and to discover that most of them have risen from the factory or the sales force. American industry remains democratic in principle and practice.

Every unit of American industry started in some small enterprise. Steel started in the forge and blacksmith shop. Automobiles started in the wagon and bicycle shops. The food companies started often in some kitchen where a woman sold the products of her cooking to her neighbors, or with a grocer who thought of an improvement in the sale of food products. The electrical companies started in the backroom laboratories of inventors.

The sewing machine, the steamboat, the Oliver plough, the McCormick reaper, Edison's electric light, Bell's telephone—thousands of new inventions, thousands of new commodities were produced in the American shop and factory, not by theoretical planners but by artisans and farmers who have always provided the sinews for industrial leadership.

Today, we stand at the threshold of new industrial accomplishment—air-conditioning, television, transportation by rail or through the air, twentieth-century housing. We are being held back by a theory that we, the industrialists, have during the past few years lost our ability to serve the public well. We are asked to subject ourselves and our workers and our processes to the ideas of men who have never produced anything and who cannot point to a single enterprise competently and productively managed under their control.

I think that the time has come when those who produce and distribute the goods of this nation should face their customers and workers frankly and squarely. No manufacturers expect "complete freedom of private control without government participation." We have heretofore developed because we have had regulation and not control, because we have cooperated with government and have not been harassed by it. Industry is not only prepared, but eager to cooperate with the government, with labor, and with the

consumer in bringing to a close this sorry chapter of our history.

To those who challenge us to solve the problem of re-employment, we say:

"Not by arbitrary methods, not by threats, not by government competition, not by excessive and unsound taxes can reemployment be accomplished. If government will be truly sympathetic with business, it will aid the return to healthy, normal, economic conditions, and there will be further reemployment in this country. If government will desist from irksome and costly experiments, and cease pursuing policies which keep private capital out of the durable goods industries, there will be re-employment.

"Industry is sure that we are on the verge of prosperity, and industry can be counted upon to do its part."



### Return of Confidence Imperative Need

By

F. A. Merrick,

President, Westinghouse Electric & Manufacturing Co.,  
East Pittsburgh, Pa.

**B**USINESS needs new blood to keep strong and healthy and make progress. While new personnel adds its share of new blood it is really new products that give zestful life to business. New products may represent new additions to the field of business or they may be products which need be added every year to replace those that become obsolete through changes in customs, methods or applications.

During the depression years few companies dared risk new ventures or new enterprises. Caution was the keynote, until the signals for the paths of business were more clearly defined.

There is reason to believe that much of the uncertainty about business is disappearing and with some further assurance that governmental actions will help rather than dissipate this belief—confidence will return and new products and new ideas will bring new blood to invigorate business and do much to return it to that mythical position known as "normal."

Nothing more than confidence is required—the need is there to a greater degree than in many periods of prosperity and once the uncertainty is removed the regular purchasing of what is needed plus the purchase of the new products that will do things so much cheaper or better will return the able and willing unemployed to work and bring prosperity to business.



## "Half of Present Equipment Obsolete"

By

T. M. Girdler,

Chairman of Board, Republic Steel Corp.,  
Cleveland, Ohio

**T**HE country today is emerging from a long depression during which investment of new capital, launching of new enterprises and, to a large extent, expansion of industrial equipment, came to a standstill. Meanwhile, capital accumulated as did the need for goods of many descriptions.

Normal forces of recovery have been at work and are making themselves felt now, as they have following every previous depression. The only question is now, will these forces be permitted to carry through or will they be hampered by burdensome taxes upon business, and other political uncertainties?

The great need of business today is confidence permitting the normal investment of large funds in future projects. There has never been in this country a greater need for new industrial ventures and for the investment of money and man-power in industrial re-equipment than there is today.

More than half of our present equipment is obsolete. Today's replacement needs alone run into billions of dollars. New inventions and new research developments have uncovered countless products which industrialists are anxious to produce—and would produce—if the future held any promise of stability. In the field of home construction and home equipment potential markets are almost limitless.

In the steel industry we very definitely see the possibility of steady work over a long period providing we can plan with some assurance for the future. Many new markets have been developed in the steel industry and vast potential markets are clearly visible upon the horizon if business and capital are permitted to proceed under conditions which do not hamper enterprise.

## Pioneering on New Fronts

By

Chester H. Lehman,

Vice-President, Blaw-Knox Co.,  
Pittsburgh, Pa.

**A**MERICA is pioneering today just as surely as it did in the days of Daniel Boone. Instead of unknown forests, uncharted seas and savages we are confronted with jungles of tangled economics, some unjustifiable

public spending and confusion in mass thinking.

On the positive side we know through experience that the American public will absorb almost any number of new or improved products in amounts which are at many times greatly in excess of any predicted saturation point. This great American spending habit and our system of credit sales contribute in a large measure to our industrial growth.

The problem now is not to revive public buying power, which is still large enough to swing business to the side of prosperity, but to put heart in production and sales promotion of new products; to encourage a return of the same confidence which begot the last economic upswing. There can be no doubt in the mind of anyone reviewing the present day successes of many modern enterprises which are doing a land office business right now, that vision and enterprise coupled with proper production and sales methods succeed in the face of what we term adverse business conditions.

Restored prosperity of sufficient magnitude to be worthy of the name must encompass a meeting of the minds of labor, capital and government on a plane where each can see and, more important, admit that the other has problems intimately associated with the good of all. Business that goes ahead with new developments and new selling policies for industrial or public betterment is encouraging a following of those who have been waiting and watching for a better adjustment of conditions.

Enlarged vision on the part of American industry as a whole will come naturally with any tendency on the part of governmental powers to restrict their activities to those limitations well defined by the Constitution.

## Revamping For Economy and Efficiency

By

N. F. Russell,

President, United States Pipe & Foundry Co.,  
Burlington, N. J.

**U**NQUESTIONABLY there are many unexplored frontiers, but the exploration and the commercial possibilities must be determined before management in my opinion is justified in large plant investment.

I do believe many industries, even the durable goods industry, which of course furnishes very large employment, can well afford at this time to take careful note of their facilities and revamp those facilities where efficiency and economies can be obtained. This is work that unquestionably has not been done in the vast majority of cases for the last three or four years, and this should furnish a considerable backlog of building. That this action is being taken is evident from the general news.

## Factory Operating Problems To Be Discussed

American Management Association To Analyze Difficulties  
Facing Industrialists

**"T**ODAY'S Problems of the Manufacturing Executive," treated from the viewpoint of changing from a depression to a production basis of plant operation, will be discussed at the Annual Production Conference of the American Management Association, New York City, to be held at the Statler Hotel, Cleveland, Ohio, April 16 and 17.

Executives in charge of manufacturing in plants in all parts of the United States are expected to attend the Conference, which is designed to air problems that now confront manufacturing executives, says Alvin E. Dodd, executive vice president of the American Management Association.

Seven problems are stated in detail on the program under the following headings:

- Rebuilding the Working Forces;
- Revamping Equipment and Plant Layout;
- Restoring Effective Production Control;
- Rekindling Incentives;
- Revitalizing the Supervisory Force;
- Intensifying Quality Control, and
- Keeping a Tight Rein on Costs.

These problems, typical of those faced by most companies, have been set up through committee meetings and mail

surveys made by A. M. A. vice presidents in charge of the two production divisions of the Association. It is pointed out that these are not the only problems, but are the most important, affecting other current problems such as production control, maintenance of quality, cost control, etc.

The manner in which each problem has been solved will be told by two speakers from companies where unusually good jobs are being done, the papers

to differ in point of view, in the size of the company where the work was done, or in the way the problem was attacked. Each speaker will make a case presentation, telling what was done and why. Discussion and comment from the floor will follow the presentations. At the last session of the Conference there will be a panel discussion which will serve to summarize and tie together the proceedings of the meeting.

The annual dinner of the Production Divisions of the American Management Association will be held on the evening of April 16, with Charles J. Stillwell, vice president, The Warner & Swasey Company, presiding. The address of the evening will be on "The Human Factor in Industry".

The Conference is being held under the joint direction of C. D. Reich, vice president, Dexter Folder Co., who is vice president of the American Management Association in charge of the Job Order Production Division, and Glenn Gardiner, Forstmann Woolen Co., who is vice president of the American Management Association in charge of the Mass Production Division.



# AN AGRICULTURAL CROP OF TREMENDOUS POSSIBILITIES FOR INDUSTRY

**S**OY BEAN production has jumped from 5,000,000 bushels in 1925 to more than 40,000,000 bushels in 1935. The size of the crop doubled in one year. It was 20,000,000 bushels in 1934.

The reason for this rapid increase is the growing recognition of the value of soy beans for the manufacture of a variety of articles used in commerce, as well as the value of the bean and the hay for food and cattle feed. Its cultivation is attractive because of its immunity to pests, the good prices the crop brings compared with other crops, besides its resistance to drought and its large yields.

Soy beans are used in industry in the manufacture of paint, enamel, varnish, glue, printing ink, rubber substitutes, linoleum, plastics, glycerine and insecticides. As a food product, it is used for flour, breakfast food, candies, roasted beans with a nut-like flavor, condiments and livestock feeds.

About 35 soy bean mills and a number of cottonseed oil mills are crushing soy beans for oil and oil meal; 20 concerns are manufacturing soy bean food products; 15 mills are making soy bean flour and more than 50 factories are turning out various industrial products.

The U. S. Department of Agriculture, joined by 12 north central states, has opened a cooperative soy bean industrial research laboratory at the University of Illinois, Urbana, Ill.

The project is attracting the attention of Southern agricultural and industrial interests in view of the recognized opportunity for developing a soy bean industry in the South because of the availability of mills, now engaged in cottonseed crushing, for handling soy beans.

G. S. Jamieson, in charge of oil, fat and wax investigations, Bureau of Chemistry and Soils, U. S. Department of Agriculture, points out that both peanuts and soy beans have been crushed in cottonseed oil mills. In the case of peanuts, it is necessary to install equipment for shelling the peanuts and separating the kernels, and in the case of soy beans a mill is needed to grind the soy bean previous to pressing them through the rolls, as is done in hydraulic press oil mills.

Several cottonseed crushing plants in Texas have been active in promoting the growth of soy beans on an extensive

## Production of Soy Beans Rapidly Increasing Because of Their Industrial and Food Value May Be Processed by South's Cottonseed and Peanut Crushing Plants

scale, and have been handling the product shipped to them in carload lots, recognizing that the mills can operate profitably on soy beans when the cottonseed supply is inadequate.

The Farm Chemurgic Council, Dearborn, Michigan, of which H. E. Barnard is the Director of Research, anticipates rapidly expanding production, which will stimulate adaptation of the oils and proteins for use in other products of the arts and industry.

In a plant at Farmville, N. C., J. I. Morgan president of the National Cottonseed, Products Association, Inc., Memphis, Tenn., handles flaxseed, cottonseed, soy beans and peanuts satisfactorily. Mr. Morgan says that with very minor adjustments, cottonseed crushing equipment can be adapted for practically all vegetable oil seeds and nuts.

**"The change from crushing cottonseed to soy beans requires practically no adjustment,"** says Mr. Morgan, adding, **"The object is to grind the soy beans through the disc hullers or disc mills, then pass the hominy-like product to the crushing rolls, then on to the cookers and the presses, following practically the same process utilized in cooking and pressing cottonseed, with proper supervision of moisture and temperature in the process of cooking."**

**"In crushing peanuts, it is most practical to use a different method in separating the peanut hulls from the kernels, than that ordinarily used in separating cottonseed hulls from cottonseed kernels. In the separation of peanut hulls from peanut kernels, the peanuts are lightly crushed in a disc huller and the hulls are lifted by air-suction nozzles, leaving the heavier kernels to pass on to the rolls, cookers and presses."**

**"Most any practical oil mill operator can master the details of these operations with very little difficulty, and judging from the interest which has been shown recently in the crushing of soy beans and peanuts, we feel that the cottonseed oil mills' operations in the South will be considerably enlarged in these new developments of agri-**

**culture during the next few years. This is especially true if our domestic production of these oil-bearing seeds and nuts is encouraged or protected from foreign competition by adequate duties or excise taxes."**

Interest in the subject in the Southwest, both from the farmers standpoint and that of industry, has been stirred by the recent conference sponsored by the Agricultural Committee of the Alexandria, La., Chamber of Commerce. The meeting was addressed by H. S. Burrows, chairman, agricultural committee; L. E. Robinson, agricultural agent of the Louisiana and Arkansas Railway Co.; John Gray, associate agronomist, Louisiana State University, Baton Rouge; Harry D. Wilson, state commissioner of agriculture, Baton Rouge; Elton Boudrau, exporter, New Orleans.

The industrial research laboratory at Urbana, Ill., will seek an answer to the question: Why do the same soy bean varieties growing under varying soil and climatic conditions show a range of 12 to 26% in oil and 28 to 54% in protein?

For paints, varieties having an oil high in "iodine number" are desirable, while for food purposes an oil low in "iodine number" is better. The oil of many cultivated varieties is given an iodine value of from 118 to 134, compared to 155 for oil of the wild soy bean from various parts of Japan, Korea, Manchuria, Siberia, and China when grown under American conditions.

Lecithin is a valuable product of soy bean oil used in the manufacture of candies, chocolate, margarine, medicines, in textile dyeing and as an emulsifier. In different varieties of soy beans, the lecithin ranges from 1.5 to 3%.

In announcing the establishment of the new laboratory at the University of Illinois, the U. S. Department of Agriculture states that Illinois is in the heart of the northern soy bean area where the yellow oil varieties like the Manchus are produced. Space for housing the laboratory was also available there, and Illinois is the largest producer of soy bean seed.

In order of importance the leading soy bean seed producing states are: Illinois, Iowa, Indiana, North Carolina, Louisiana, Missouri and Ohio.

The new laboratory will be in charge of Dr. O. E. May, of the Bureau of Chemistry and Soils. Breeding work will be under the direction of W. J. Morse, of the Bureau of Plant Industry.

# RAILROAD SITUATION DEMANDS CORRECTION

## Problems and Remedies Discussed By Leading Officials

**T**HE letters we are permitted to present from leading railroad officials deserve careful study on the part of the business men of America. The problems the roads are facing and what is necessary before they can overcome present difficulties are stated convincingly, and the views of these practical men as to the remedies are much alike.

It is time for business America to recognize a situation that demands correction. It is time for those in authority to stop bullying the railroads. It does no good to refer to mistakes of the past, which in some instances may have been unreasonable and deplorable. It is imperative now to consider what will help them, because of the indispensable part they perform in our business life, and the huge sums of money of investors and trustees that have gone into their capitalization.

We cannot do without the railroads and it is only fair and desirable, from every standpoint, that they shall have a clearer way, freer of obstruction, than they have had lately to run their business to the best advantage of everybody concerned. If it is to be otherwise there will come about what no sensible person likes to contemplate—government ownership. We had enough of that some years ago. It is likely to be in effect again and permanently unless destructive measures are abandoned.

It is estimated that the laws now before Congress for enactment will add an additional billion dollars yearly to railroad expense, thereby creating a load which will prove unbearable.

As business improves, it is essential that the railroads be in proper shape to handle increased traffic. If the way is opened, their purchase of equipment to meet their traffic requirements will go a long way to employing the idle.

### Public Opinion Must Permit Earning and Purchasing Power

By

H. D. POLLARD, *Receiver,*  
Central of Georgia Railway,  
Savannah, Ga.

**F**OR railway industry to regain its normal buying power, indeed for it to survive and avoid government ownership, public opinion must permit it to earn its operating expenses, taxes and a return on investment.

State and Federal governments, both before and during the depression, have subsidized the competitors of the railroads, on the highways, airways and waterways, all of which are virtually unregulated. On the other hand railway regulation has been tightened, railway rates reduced and railway earning capacity undermined. Government policies have increased wages and the prices the railways must pay for materials and supplies. The Social Security Act, the Railroad Retirement Act and the Guffey Coal Bill add almost \$100,000,000 annually to the operating expenses of an industry of which one-third is at the moment in bankruptcy. Labor leaders are pressing for additional legislation, the six-hour day, additional crews, limitation of train length, which would add \$750,000,000 per annum more to operating expenses.

Only an aroused public sentiment can restore the railways' earning power and purchasing power.

### Carriers Should Have Fair Chance To Help Themselves

By

A. D. McDONALD, *President,*  
Southern Pacific Co.,  
San Francisco, Cal.

**F**OR the railroads of the United States to regain and retain their position among the nation's largest buyers of material and supplies and employers of labor they should have a fair chance to help themselves. In doing this a most decisive step would be taken toward the nation's recovery.

The burden of taxation is steadily increasing. Legislation in effect and in prospect threatens heavy additions to operating costs.

The railroads strictly regulated, must meet the competition of unregulated and subsidized forms of transportation.

State and Federal Government have only made a start toward the control of highway competition. Passage of the Pettengill Bill would place water competition on a fairer basis. With all forms of transportation on a comparable basis and the railroads relieved of other present and prospective restrictive legislation and regulation imposing undue and unfair burdens upon them, they can be depended on to take their proper place as buyers, employers and the country's strongest arm of usefulness.

**T**HE present state of American railways is far from healthy and needs correction, because they are the most important part of our transportation system. Their continued impairment, financially or physically, is a calamity.

The railroads, in the front rank of the country's largest industries, annually pay in taxes about 400 million dollars. If the government takes over the roads, what agency will replace their tremendous tax contribution? Their influence upon the entire activity of the country? Their investment of \$25,000,000,000 of the people's savings?

Every man, woman and child in the nation is affected directly or indirectly by the success or failure of the railroads under private management.

### Threat of Government Ownership

The threat of government ownership of railways, ignored by some, is actual at the moment. If legislation now pending in Congress becomes law, the railroads probably cannot go on under present ownership under the strain of the increased operating costs, conservatively estimated at one billion dollars a year.

Industry, when it rests in private hands, is a tax-payer. Governments are tax-consumers.

It is not that the people as a whole desire government operation of the railroads. Generally, they remember a Federal-fiasco which occurred during the War. It is because an inert public sentiment will not arouse itself to prevent it.

More than one-fourth, (28%), of the country's railroads are now in the hands of receivers, representing about 71,000 miles of trackage. The other roads are either just making the interest on their investment, making operating costs, or showing a small profit.

### Vast Buying Power

It is important to note that the country's railroads in normal times absorb 25% of the domestic steel output, an equal amount of the lumber production, a greater proportion of the coal supply, as well as being heavy purchasers of oil, (19%), copper, (15%), cement, (18%), and a large variety of other products.

Besides capital goods, (i. e., track, trestles, culverts, new locomotives and passenger cars), the railroads annually purchase more than 70,000 commodities in the open market. To mention a brief few: paints, chemicals, lubricating oils,

## THE RAILROAD SITUATION DEMANDS CORRECTION (Continued)

electrical materials, commissary supplies for dining cars and restaurants, rubber and leather, telephone and telegraph supplies. The list might be continued indefinitely. There are omitted such necessities as fuel, (coke, wood, electricity, coal and oil), forest supplies for cross-ties, trestle-work, and sheds, iron and steel for switches and track fastenings. Purchases by the Class I railways of fuel, material and supplies in 1935, amounted to 593 millions of dollars. Railroad buying is of vast proportions.

Behind all these purchases lies the story of research, experiment, the employment of men and money, contributing to the nation's prosperity. Cut off the railway demand and you lop off an impressive part of the nation's total merchandising.

### Restrictive Legislation Pending

The railroad "Retirement Act" is now law and will so remain unless the Supreme Court intervenes. Its annual estimated cost is put at 57 million dollars.

The "Full Crew" bill proposes to add men to train crews, whether needed or not. This, if enacted, will cost 70 millions more per year, or 4% additional on the basis of 1934 pay-rolls.

There is the proposed "Train limit" bill which would limit the length of freight trains to less than 70 cars, and add \$150,000,000 to railroad operating expenses.

The "Six Hour" bill, urged by organized labor, would on the present volume of traffic, annually cost about 366 millions of dollars.

The bill proposing control of track and signal inspection, and dispatching office inspection would impose an added financial burden.

Lately, the Social Security Act, which increases expenses 16 million

dollars per year per year for three years and then remains constant, and the Railroad Retirement Act and the the Guffey Control Bill have proved new thorns in the already sore flanks of railroaders. Complete restoration of the railroad employees' wages

threatens to increase operating expenses an estimated \$150,000,000 per year.

Conservative estimate of the total annual cost to the railroads of proposed legislation, is one billion dollars.

Add to this the increased cost of

## Backbone of Nation's Transportation System

By

L. F. LOREE, *President*,  
The Delaware & Hudson Railroad, New York, N. Y.

IN my opinion, the original and legitimate goal of the railroads is, first, to provide a reasonably safe and profitable investment for capital funds, and, second, and a necessary concomitant, to provide the country with a safe and prompt transportation service at the lowest possible cost to the public. The fact that the railroad industry had become the nation's largest buyer and employer is merely one effect of the effort on the part of the owners and managers of railroads to attain the above two goals.

To form a sound opinion of the things that are necessary to restore railroad operation to that degree of profitability which will enable them to continue to be—what they have been for one hundred years—the backbone of the transportation system of this country, it is necessary to analyze the causes contributing to their present situation. In my opinion these are—

1. The depression—retarding of business confidence.
2. Hand-to-mouth industrial buying.
3. Electric transmission—development.
4. Pipe lines.
5. Private automobile and the motor truck.
6. Exhaustion of natural resources—timber, ore, etc.
7. Panama Canal.
8. Shifting of industry.
9. Political rate making.
10. Taxes—burdensome.
11. High wage rates, and restrictive labor and legal requirements.

12. Legislation—restrictive.

13. Unwise capital investments.

To assure the future financial stability of the railroads, and thus to enable them to perform the service which may reasonably be expected of them, I think we must, among other things, look to the—

- (a) Adjustment of taxes, wages and working conditions.
- (b) Elimination of waste through the abandonment of unused service, obsolete facilities and mileage no longer justified by the traffic.
- (c) Development of the essential railroad facilities to the highest state of efficiency through the improvement of grades, reduction of curves, shortening of lines, etc.
- (d) Separation of the conflicting and inconsistent powers of prosecutor and judge, vesting the former fully in the Interstate Commerce Commission and leaving the latter to the courts.

## Long and Short Haul Clause Precludes Rail Competition For Much Water Borne Tonnage

By

S. T. BLEDSOE, *President*,  
The Atchison, Topeka and Santa Fe  
Railway System, Chicago, Ill.

ONE fundamental need is more business. So far as this is dependent upon general recovery there is nothing which can be done except work soundly and constructively for a restoration of the general business health of our country. To a certain extent business is taken from the railroads by subsidized carriers, which ought to have to stand on their own merits. The railroads are also restricted by the long and short haul clause from offering effective competition for certain water borne tonnage, which situation would be improved by the enactment of the Pettengill bill.

On the other hand the railroads need to reduce expenses and taxes but they are seriously handicapped in both directions. The Social Security Act and the Railroad Retirement Act with its conjoined Tax Act have been passed which lay heavy levies upon the railroads. They are also threatened with other measures in Congress, such as the train limit bill, the six hour day, and the like, which would lay an impossible burden upon them.

I think progress is being made toward increased business and I hope some steps will be accomplished to reduce expenses, that the threats may not materialize and that presently the railroad industry will get back onto a sound basis of operation.

## Square Deal For Railroads Requires Placing All Forms of Transportation On Equality

By

A. C. NEEDLES, *President*,  
Norfolk and Western Railway Co.,  
Roanoke, Va.

BECAUSE they are the largest single customers of other industries, and one of the country's greatest employers of labor the welfare of the railroads is vital to economic recovery and national progress. Despite this fact, they are singled out as an industry and forced to operate under an unsound governmental policy.

To bring about railroad recovery, certain definite steps are necessary.

First—repeal laws which rigidly restrict railway operation and management. The railroads should be given freedom to exercise greater authority over their business. Second—repeal laws which have saddled upon the railroads tremendous increases in expenses. Increased revenue cannot be used for purchases and payrolls when taken by taxes.

Third—withdraw the vast governmental subsidies granted to the railroads' competitors. Place all forms of transportation on an equal basis. The railroads are not afraid of fair competition.

The public is the most vital factor in the achievement of these objectives. For the public is responsible for governmental action. A vigorous public demand to give the railroads a square deal, and their rightful opportunity to contribute to national recovery, will bring definite favorable results.



# THE RAILROAD SITUATION DEMANDS CORRECTION (Continued)

materials which, brought about as a result of N. R. A. and still apparent, amounts to an estimated \$100,000,000 per year, (from the Bureau of Railway Economics), and you see more clearly what producers of railway

transportation are facing. Emergency freight rates, which have brought in an extra \$105,000,000 annually, thus compensating for the increased cost of materials, will be discontinued as of June 30, 1936, unless the rail-

roads' pleas are effective in procuring their continuance.

## Trends In Industry

If we break down this ramifying subject into a few divisions, we see better just where the railroads stand at the present time, both in relation to the government, other competitive carriers and the market-demand created by a healthy and thriving transportation system.

## New Rolling Stock

A present trend in the railroad industry is toward highspeed light-weight carriers, to reduce operating costs through lower fuel consumption, decreased train crews, etc., and to place the railroads in a better competitive position.

If this trend continues, the following needs, among others, will have to be filled:

Round houses must be replaced by sheds long enough to house articulated trains; these sheds must be equipped with wheel-drop pits and facilities for maintenance of Diesel-electric power equipment; grades, roadbeds and curves must be made smoother and redesigned for higher speed travel; signals and sidings must be relocated to obtain longer sight distances and reduce delay in schedules.

This means construction of buildings and equipment, demand for new power tools, skilled mechanics and the services of construction companies to grade and fill existing rights of way.

Electrification requires facilities such as distribution lines and substations. An electric locomotive costs more than its counterpart, the steam locomotive.

## Simple Three-Plank Platform

By

MATTHEW S. SLOAN, *Chairman of the Board and President.*  
Missouri-Kansas-Texas, Railroad Co., New York, N. Y.

THE carriers can assume their rightful place as industrial and commercial leaders only through the force of an enlightened public opinion.

The belief is far too general that the improvement in general conditions alone will restore the carriers to a safe and sound footing. Granting that the present upward business trends continue (and I have found nothing in my almost constant travels during recent months to indicate otherwise) the roads still will be in a difficult position unless they, in common with all business, receive a fair deal.

This can be assured by the adoption of a simple three-plank platform: First, equality of opportunity to compete with other forms of transportation; second, a legislative and political holiday against existing and proposed laws which tend to further hamper the carriers and to increase their cost of operation; third, a greater freedom from government restrictions and political harassment, to the end that they may exer-

cise that progressive initiative which has made them one of the greatest industries in the world.

Adoption of such a platform would mean the regulation of all forms of transportation on a parity with the regulations imposed upon the railroads—equality of regulations as to rates of pay, hours of service, fixing of fares and rates. It would mean an end to open or hidden public subsidies to competing forms of transportation. It would mean putting an end to all legislation which depletes the treasuries of the carriers without resultant improvement in service and no benefit to the public. And it would mean doing away with rules and regulations that pile additional embarrassments and handicaps upon the railroads.

If such a platform is carried out, and I believe that it will be, because I think the American public is getting around to the point where it is going to call a halt on all unsound and on all socialistic tendencies, the railroads will give the nation the finest comeback performance any industry has ever staged.

The railroad problem is the public's problem. It is a grave one but by no means a hopeless one—not if business men, property owners and the public generally see it in its true light and, accordingly demand fair play for the carriers. A determined and well defined public attitude will usher in a new era for the carriers and they, I promise you, will lose no time in assuming their rightful place as the nation's largest employer and the nation's largest spender.

## Discrimination Exists

By

FITZGERALD HALL, *President,*  
The Nashville, Chattanooga & St. Louis  
Railway, Nashville, Tenn.

REGARDLESS of new forms of transportation, as valuable a contribution to our economic welfare as some of them are, the railroads are still indispensable. It is elemental, therefore, that they must be put on a paying basis so that they can do whatever may be necessary—and much is necessary—to repair and improve their facilities to meet actual public requirements.

With conditions as they are, those in charge of railroads naturally hesitate either to borrow funds or to use such funds as may otherwise be available to improve and expand their facilities. If the railroads could be given some reasonable assurance that discriminations against them would cease, that they would be treated by public authority as are all other forms of public carriage—no better and no worse—I am convinced that there would be a general revival of railroad buying, with the resulting increase of employment. No single factor would, in my opinion, go further to restore normal business conditions.

But so long as the politicians and the bureaucrats undertake, by statute and otherwise, to assume the functions of management, so long as existing discriminations are continued, and so long as the government itself directly or indirectly occupies any part of the transportation field—little progress can be made. With all their deficiencies, the men who actually run the railroads know infinitely more about what ought to be done than anybody else.

## Improvements In Metallurgy and Methods of Fabrication Spur To Substantial Buying

By

RALPH BUDD, *President,*  
Burlington Lines, Chicago, Ill.

THERE are at least two circumstances which tend to bring the railroads into markets of durable goods in rather a large way. The purchases of locomotives, cars and steel rails have been relatively small since 1930. Although the volume of traffic has been as low as one-half of 1929 traffic, and the equipment supply has been ample, a revival of traffic and the diminished number of cars make it necessary to consider large replacements. To a large extent the same is true of locomotives. In both instances the improvements in metallurgy and methods of fabrication of superior alloys make it possible to obtain cars and locomotives of such improved design, that purchase of new equipment, rather than repairing some of the old, can be justified by the savings.

Rail has been wearing out faster than it has been replaced during the last several years, and to a large extent this deficiency will have to be made up. Two things, therefore, the need of the equipment and the availability now of improved metals, designs, and fabrication, should result in substantial railroad buying. In fact, such buying has already begun.

The way to speed it up is to leave the railroads free, as far as possible, to handle their affairs as other business does. Anti-railroad bills which have been introduced in Congress, and would add so much to the cost of operation, and which would increase the number of employees unnecessarily tend to retard railroad buying.

A typical locomotive for electrified service costs in some cases as much as \$500,000.

### Electrification

In 1934, the Class I steam railroads, (i. e. railroads whose operating incomes exceed \$1,000,000 annually), operated 2,368 miles of electrified main line, and a total of about 5,500 track-miles including yards and sidings.

There are now over 750 electric locomotives in use in the country, or less than 1.5% of the total number of locomotives in use. There are also 2,600 electric multiple-unit cars, representing 5.6 per cent of the total passenger cars in use.

### Advanced Designs

The demand is for greater speed in the transport of freight and greater comfort for passengers. New light-weight aluminum and steel alloys are in requisition for freight car manufacture, and in engines where streamlining is important. Air-conditioning, which has drawn so much comment and prophecy in the past few years, accounting for an expenditure of approximately 40 millions of dollars during the height of the depression, is apparently destined for greater and greater adoption. At the close of the year 1935, about 6,000 cars had been air-conditioned equipped.

### Traffic Breakdown

Present available figures on commercial passenger travel indicate that the rails transport almost two-thirds of the nation's paying passengers.

Due to the absence of anything but fragmentary data on certain classes of commercial freight traffic, (notably in the cases of intercity trucking and Great Lakes freightage), we find discrepancies between the two authorities, Hale and the Interstate Commerce Commission, (covering 1934 and 1932 respectively). We include both for reference. Percentages refer to ton-miles.

	Hale's-Chart	I.C.C.
Steam railroads .....	72 %	73.9%
Great Lakes carriers ..	12 %	7.8%
Petroleum pipe-lines ...	8.8%	6.4%
Intercity trucks .....	4.6%	9.4%
Inland waterway .....	2.6%	2.5%
	100.0%	100.0%

Our Act to Regulate Commerce, or "Interstate Commerce Commission", which dates from April 5, 1887, was established to regulate unfair competitive practices between America's growing railroads. Since that time, increasing litigation toward almost myopic control of the rails has so criss-crossed with regulation the fabric of the U. S. railroads,

## Railroads—Chief Instrument of Transport

Louisville and Nashville Head Declares No Economic Question Before American People of Greater Importance Than That of Maintaining the Present Adequate and Highly Efficient Railroad Plant

By

J. B. HILL, *President*,  
Louisville & Nashville Railroad Co.,  
Louisville, Ky.

**R**AILROAD transportation is indispensable to the welfare of the country. So far as can now be determined, railroads are, and will continue to be for an indefinite period, the chief instruments for transporting the nation's basic necessities in times of peace and essential agencies of national offense and defense in times of war. Therefore, no economic question before the American people today is of greater importance than that of maintaining the present adequate and highly efficient railroad plant.

For many years railroads had almost a monopoly on transportation. Their competition was largely with each other. Freight rate increases or reductions, changes in rates of pay or working conditions of employees, state and federal regulation, or any other general condition, affected all of them alike, but without the loss of traffic to the system as a whole. In recent years this situation has changed. Other forms of transport, such as waterways, highways, pipe lines and airways are carrying an increasingly large amount of traffic—perhaps as much as 50% of the volume now moving. This competition has shown the need for improvements in railroad facilities and service. However, when no money is made from railroad operation, as has largely been the case in recent years, improvements cannot be made from earnings, nor will a conservative management advocate or the public invest in new railroad bonds for fear the principal and interest cannot be paid. When we add to this state and federal regulations, and other conditions which do not equally apply to competing agencies, the difficulty in which railroad business finds itself is apparent.

In my judgment, therefore, the most important things necessary to effect railroad recovery are the adoption of measures which will serve to restore railway purchasing power and credit—measures that will eliminate unnecessary interference with

that few executives undertake a new step without recourse to a lawyer.

So, despite numerous swords of Damocles hanging above their heads, American railroads confidently face the future.

The greatest hope for the railroads—and for the country—is for the Government to grant freedom to manage their own affairs to a greater extent. No one denies the need for the I.C.C. as grand umpire. But at present railroad ownership means nothing. It may through stockholders' meetings appoint directors, and the directors may appoint managerial officers, but when all is said and done by "ownership", the railroads still remain the pawns of Government, unable to accomplish their own salvation by means of their own initiative.

railroad managements, enable them to adjust their operations to economic conditions and give them opportunity to meet their competitors on a fair and equal basis.

Specifically, subsidies to other forms of transportation should be stopped. Commercial users of highways, waterways and airways should fall under regulations as to rates, services and hours of employment to the extent that railroads are regulated, or else railroad regulation should be reduced to place all on equal footing. After ten years' agitation Congress has passed a law regulating motor carriers on the highways, but it falls short of the regulation imposed upon railroads. While a step in the right direction, it should go further if the present policy toward railroads is to be continued. Many states have laws regulating highway traffic, but some are inadequate and poorly enforced.

Being treated in all other respects as a public utility, railroads should have relief from heavy taxation, or else other forms of transport should contribute equally to the functions of government. Section 7-B of the Emergency Transportation Act should be repealed. The Long and Short Haul Clause of the Fourth Section of the present law should be changed in conformity with the Pettengill bill now pending in Congress. Other proposed legislation now pending, such as the Full Crew bill, the Train Limit bill, the Six-Hour Day bill, and the Track and Signal Inspection bill should not be enacted into law. These, in a highly competitive world, I do not believe are in the interest of the public.

There are many things the railroads themselves would like to do. They would like to reduce grades and curves; build better bridges; lay heavier rail; install automatic signals; buy new shop machinery and tools; scrap hundreds of thousands of old freight cars for better cars of lighter weight and greater carrying capacity; replace many passenger cars with lighter cars; air-condition passenger equipment as fast as the art will economically permit; buy new and improved locomotives—all to the end of further improving their service. But they are largely handicapped and restricted by conditions already explained.

Members of Congress and State Legislatures, therefore, and all public spirited citizens alike, can perform no more important and patriotic work than to assist in adjusting these conditions and thus open the way for the rehabilitation of the great railroad industry which plays such a vital part in our economic, industrial and social life. The American people should, in the public interest, study and reach a clear understanding of the entire transportation problem and take such action as will correct the unfair conditions now prevailing, not for the purpose of favoring railroads, but for the purpose of giving all transport an opportunity to work out its own salvation under the play of economic force, restricted or directed for all alike. The railroads ask nothing more.

# RESEARCH—Progress Insurance

By

**Dr. C. M. A. Stine,**

Vice President, E. I. du Pont de Nemours & Company, Inc., Wilmington, Del.

**W**HETHER we like it or not, we are moving today to the ever-quickenning tempo of change inspired by the application of science to industrial problems. Not alone the scientific journals, but the ordinary media of popular news bear almost daily testimony to this fact.

Schools, stores, and factories are being built of glass blocks that resist fire, moisture, vermin and acid, and set new standards for daylighting. At the same

## Revolutionize Construction

time the prefabricated house of steel is here as a commercial product, aluminum and stainless steel alloys have established themselves as architectural materials, air-conditioning has become almost commonplace, painters are relearning their trades in the light of a revolution in finishes, and the whole construction field faces an upheaval that promises to uproot the methods and traditions of centuries.

From basement to roof the home is changing structurally, and so are the materials that go into its furnishings, its heating equipment, its kitchen appliances, the clothing worn by its occupants, the food they eat—in short, the wand of change is touching virtually every article that enters into modern living, which means, in turn, that it is touching in some manner every manufacturing plant down to its humblest product.

## We Advance To Change

Recently, the National Board of Fire Underwriters, after months of testing, stamped its approval upon the first practically fireproof lumber, a dream of man since the ancients suggested soaking timber in vinegar to prevent burning; a new and radically different cleansing agent, hailed by one of our largest soap manufacturers as "the successor to soap," went on sale in 5-and-10 cent stores, and two great glass factories were reported successfully producing glass fibers of one-twentieth the thickness of a human hair and flexible enough for weaving into textile fabrics.

## Create New Frontiers

It is almost impossible to keep up with the pace of change. It is literally true that the newest sensation of today may be obsolete tomorrow. For example, even as the glass industry announced its latest triumphs in research, there was talk of a substitute for glass that duplicates its desirable qualities but which is unbreakable, and in the plastics industry they will tell you also that it is only a matter of time until chemically synthesized materials will challenge wood in a dozen fields, including furniture manufacture.

## Forward Pace Accelerated

Those who ask, hesitantly, if scientific research pays, are confessing by their question that they have fallen out of step with the times. Scientific research has become a positive necessity to every business that hopes to continue in business for long. The change has been fundamental, and it has been in the shaping for years.

## Research—Fundamental Need

## War's Close Spur To Achievements

Until the beginning of the present century—in fact until the close of the World War — industrial progress was generally limited by the types of natural materials and energy at hand. It was not possible to build a modern automobile in 1914—the materials that go into it were yet to be created by metallurgist and chemist. Mechanical refrigeration and air-conditioning for homes was not possible—the needed safe refrigerants were yet to be compounded. Radio and even aviation were still in an impracticable stage because of a lack of materials yet to be discovered. As the World War closed, industry was interested mainly in things and in applying to its use materials provided by nature since the dawn of time.

True, we were building and designing

better homes, but they were of the same materials—stone, brick, wood—out of which homes had been built for thou-

**F**OR thirty years Dr. C. M. A. Stine has been prominently identified with du Pont activities—first, as a research chemist, next as a director of organic chemical research, then as assistant chemical director, and later as chemical director. Since 1930 he has been a vice president and director of the company and a member of its executive committee. During the time Dr. Stine was director of research in the central chemical department of the du Pont Company, many important developments were achieved.



Dr. C. M. A. Stine

sands of years. We were wearing the same kind of clothing of wool, cotton, silk or flax that our great-grandfathers had worn, merely fashioned to a new style and woven by machine instead of by hand. We were eating the same foods, using the same paints and glass, and many of us were thinking that nothing was left in the way of raw materials to be discovered.

By and large, we had reached the limit of advance with natural materials, as such—materials, incidentally, that we had adapted to our uses not because they were the best, necessarily, but because they were the best to be had up to that time. Beyond improvements in manufacture brought about by the skillful use of machinery and a wider range of application of the natural resources, notably in the electrical field, from the scientific point of view we had made little practical progress in the art of living. Like the savage aborigines, we were still utilizing what Nature had cast at our doorsteps.

## Spotlight Focused On Chemist

Then our interest changed. Industry awakened to the possibilities of applied science. Instead of being concerned only with the uses of natural materials, we became interested too in the intricate chemistry of their composition. And,



what is more important, we became intensely interested in compounding wholly new materials, non-existent in nature. The chemist replaced the mechanical genius as the star in the industrial show. We entered an era of synthesis, and after thousands of years industry began to break from its dependence solely upon natural materials.

This brief review is perhaps elemental, but it seems necessary in view of the fact that there has prevailed a wide misunderstanding of the place of research in industry. A great number of business men still regard research as one of those things that may be taken or left alone as fancy dictates. If we were the only civilized nation in the world this might be true, but it so happens that in the world as it is no one nation can isolate itself from science and long remain economically free. Science recognizes no international boundaries, so that as a nation we can neglect it only at our peril. This means, in turn, that the industry or company that neglects research is distinctly at the mercy of its live competitors who continually utilize research. Improvement can be met only with improvement, change with change.

#### Improving On Nature's Products

Moreover, fully to grasp the situation, it must be understood that the present-day industrial scientist is not, as some think, trying to imitate natural products—he is bettering Nature's materials and developing new ones not found in her category. The process of Nature cannot be controlled like those of the laboratory—drought, wet seasons, pests and disease inevitably cause variations in quality. On the other hand, man-made products can be kept pure and uniform year in and year out, which is why synthetic camphor made from turpentine is superior to that of the camphor tree, why rayon today is setting standards for silk.

Why duplicate natural rubber? It breaks down under heat and contact with oil, grease and gasoline. "DuPrene," the synthetic product, compounded from coal, limestone, salt and water, outdoes natural rubber as an all-around performer—it is better than rubber. The new nitrocellulose lacquers and the still newer glyptal enamels were not developed merely for the sake of substituting other finishes for paints. They serve modern purposes for which the old paints and varnishes are utterly unsuited. The new cleansing agents I have mentioned are no relation whatsoever to soap, and they are three to five times more efficient, to say nothing of having other virtues that soap lacks.

Admittedly, at the outset some of these new man-made materials were a long way from being as good as they should

have been. Experienced personnel and efficient equipment cannot be conjured out of the air over night. But today, we have learned better how to apply to industrial problems the knowledge that research makes available. We have profited by our past failures. Research has become a force in business that is to progress what power is to production. And I sincerely believe that what has already been done will be insignificant when compared to future accomplishments.

You ask: "But what about the smaller manufacturer? He has neither the money nor the men to gamble on experiments that may in the end prove worthless."

My answer is that the smaller manufacturer is in a stronger position today than he has ever been in our history, provided that so called "big business" is not taxed or legislated out of existence under the mistaken impression that there is some inherent virtue in business being small. He is in the enviable situation where he may profit almost at will from the discoveries of the large research laboratories, and yet not be compelled to share a single dollar in their risks.

Research costs money, sometimes millions of dollars before there is a net return. It takes time—from five to eight years of continuous and expensive research effort frequently elapse between the start of a project in the laboratory and its commercial debut. And there is always the chance that nothing may come of it. This means that only fairly large companies are in a position to undertake important experiments or to carry on the number of experiments necessary to insure a safe margin of successes against the certainty of some failures. As one extreme instance, in establishing an American dye industry and rendering hundreds of American textile mills independent of foreign monopoly, the du Pont Company alone invested more than \$40,000,000 during the first five years, without getting one cent of profit.

If this were the beginning and end of modern research, the small manufacturer would be in hard straits indeed. His most earnest efforts at improvement would be swept aside by the very might of his "big business" competition. However, in practice, large-scale research has the very opposite effect on the progress of small business, and for a very substantial reason. The small business is one of the most important sales outlets of the large business, or it may be a supplier to it of materials. In other words, the two are interdependent.

My own company, which is one of the largest manufacturers of rayon yarn, does not knit a single sock or weave a yard of rayon goods for sale. Not a chair upholstered in "Fabrikoid" nor any

other article in which this product of research is used is made or sold by du Pont. Search the retail stores and you won't find a single cosmetic labeled du Pont, or a single bag of fertilizer, or an article of rubber, although the products of our research have contributed various improvements to all of these and to countless other commodities in daily use.

If we had attempted to think up all of the uses to which one product of research such as "Cellophane" has been put we would have had time and energy left for little else. Once moisture-proof "Cellophane" became available, literally thousands of people contributed to its success by their ingenuity in adapting it to commercial purposes from which they directly profited.

The strength of any business is no greater than the strength of its customers, and the customers of a large diversified chemical company are largely other manufacturers. Du Pont rayon is sold as yarn to weavers, who in turn sell their fabrics to garment manufacturers. None of the textile mills buying rayon yarn had the resources or the experience to sponsor the research that was absolutely essential in rayon's development, but every one of them profited by it nevertheless. Similarly, "Fabrikoid" is sold to businesses of smaller size who have their particular needs for it, our perfumes go into soaps and cosmetics of innumerable names, and so on through the list of our products with only a comparatively few exceptions. I have used the du Pont Company for illustration, not because it is exceptional, but because I am familiar with it.

#### "Big Business" In Role Of Sales Agent For Small Industries

The great automobile companies have the same close relationship with smaller producers. Ford, for example, buys from more than 5,000 suppliers and so becomes, in effect, their sales agent. When he prospers, so do his smaller suppliers.

I don't think the small manufacturer need worry about the present-day trend in scientific research. On the contrary he can look to it confidently for profit if he is alert to opportunity as it comes along. He has the chance to gain from cooperative research undertaken in his own industry. He can, within his means, do some studying himself to find new uses for his product and ways to better it in his own plant. And over and beyond this, he has the research scientists of the big laboratories working for him at no cost. When something new is discovered in which he is interested, the big companies will even lend him technical men to assist him in getting into production. They will supply him with sales helps and even back him up with national advertising.

It is the larger businesses and industries that must worry about research and invest in it to their limit as an insurance that progress will not leave them behind. As a dependable factor for progress, the lone inventor has become an anachronism. We have entered a day when men working together in organizations, and organizations working with organizations, constitute our forces for betterment. And the trend is toward more things for our daily use, toward better things, toward lower prices, a wider enjoyment of industry's goods, and therefore an enhanced standard of living.

# COMPLETING COLD-ROLL STRIP MILL

**A**S part of its 30-million dollar building program, designed to place the company in a position to care for industry's growing demands for its products, the Bethlehem Steel Company, Inc., Bethlehem, Pa., has completed construction on seven large new buildings at Sparrows Point, Md., to house equipment for the continuous rolling and processing of cold steel ingots.

The new mills are adjuncts of the extensive tin plate mill at Sparrows Point and their entire product will be used in the fabrication of tin plate, enabling the Bethlehem Company to keep pace with the expansion of its business particularly in the Eastern and Southern markets.

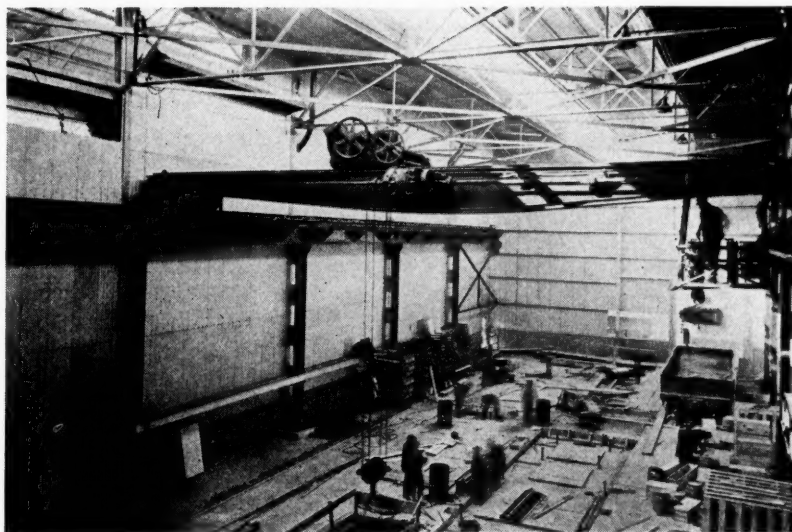
The new buildings include a roll shop, a pickling and coil storage building, a motor room, a cold mill building, an annealing building, a skin pass building, and an assorting room.

Machinery to be installed in the plants will eliminate many of the heating operations now required to roll red-hot steel into plate and other patterns. Briefly, it consists of a continuous pickling unit, a five stand tandem 4-high motor driven mill, two entire scrub-

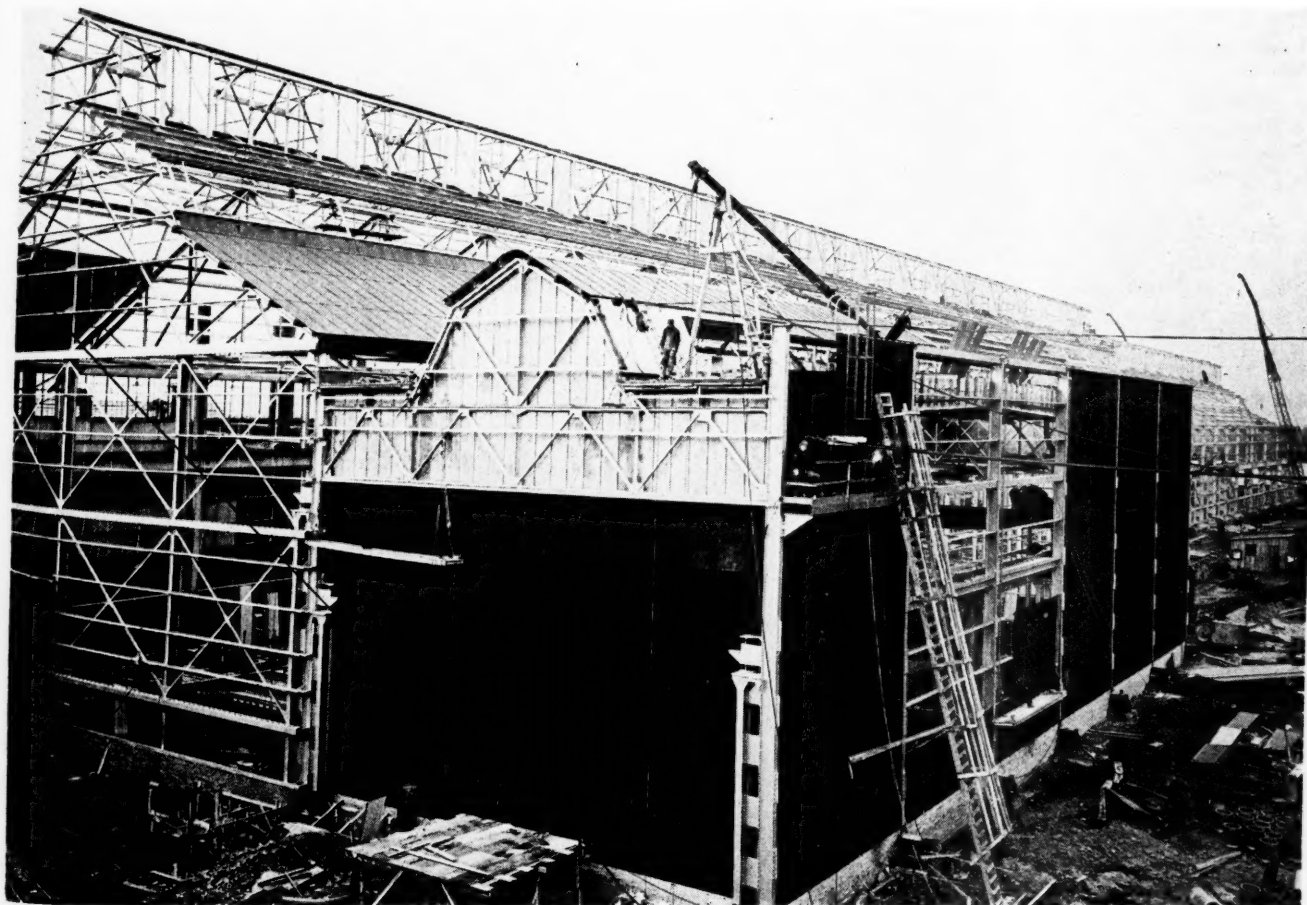
bing units, six radiant tube type annealing furnaces, each capable of annealing eight stacks of coils, two motor driven single stand 4-high skin pass mills, three sets of levelers, continuous side and end shears, classifiers and pilers, two assorting machines, together

with the necessary auxiliaries such as cranes, tractors, conveyors, scales, individual shears and roller levelers.

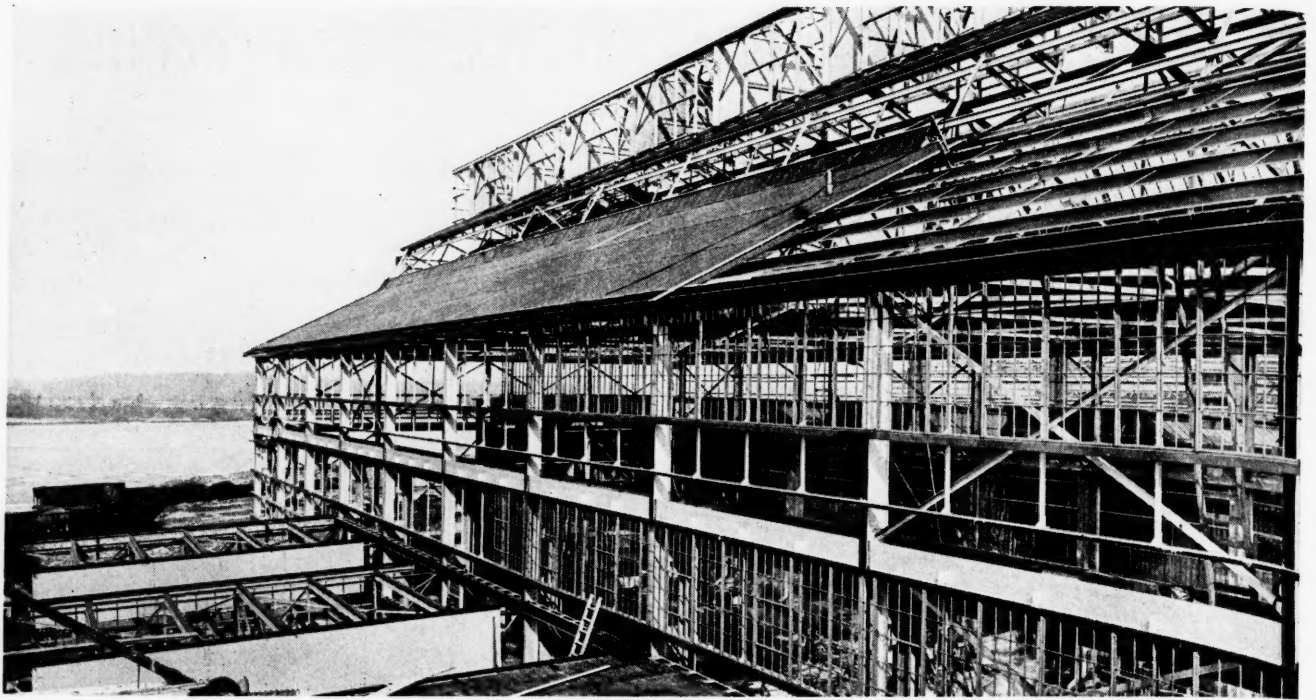
A particularly impressive record was established in respect to time consumed for steel frame erection. Work on this was begun on October 25, 1935, and all



Structural Details of New Sparrows Point Cold-Rolled Strip Mill







frame work on the main buildings was finished and completely riveted by January 15, despite an interruption of eleven days due to unfavorable weather. This rapid progress was largely made possible by properly scheduling the fabrication and shipment for erection so that the complete material for each bay was shipped in the order of erection. The work was done on a five-day, 40-hour week basis.

The seven new buildings provide a total area of over 200,000 square feet of floor space. The largest of the new buildings, the coil storage and pickler building, is 504 by 105 feet, the cold mill building, 476 by 105; the annealing building, 308 by 105; the skin pass building, 252 by 105; the motor room, 168 by 105. The two smallest buildings, the roll shop and the assorting building, are 224 by 60 and 196 by 47 feet, respectively.

#### More Than Four Acres of Roofing and Three Acres of Siding Were Used

Structural steel used in the buildings totaled 3,566 gross tons. A total of 82,000 field rivets was used. More than 16,000 cubic yards of concrete were required for foundations and floors.

All the new buildings were designed with particular reference to proper light and ventilation, and comfort for workers, and should make for more efficient operation than in old-style type of buildings deficient in lighting and ventilating facilities.

The buildings are of the corrugated sheet type, (Robertson Protected Metal), with brick curtain walls. Another feature of the new buildings is the placing of exterior monorails under the eaves, by means of which window washing will be facilitated. The original glazing of the building was also aided materially by these monorails. Galvanized

steel corrugated siding was used to the extent of 45,700 square feet.

Copper flashing was used to insure satisfactory window waterproofing throughout most of the buildings.

In the case of the cold mill, the skin pass buildings and motor room, insulated roofs with internal sash gutters were provided to prevent condensation forming and dripping on material in process of manufacture. As one whole side was blanked off on all buildings, a two-step or double-deck roof, having continuous fixed monitor sash set at an angle of 30 degrees, was provided for connecting the two planes of the roof, thus supplying—with the sash on one side of the building—ample light over the whole floor.

The side sash, of which there are either two or three rows, are also of the continuous fixed type except for a

(Continued on page 68)

### Details Of Equipment and Materials Furnished

Robertson Protected Metal Roofing and Siding For All Buildings, Ventilators For Service Building, and Keystone Beam Flooring In Motor Room.  
H. C. CROWLER, JR., (representing H. H. ROBERTSON CO., Pittsburgh, Pa.) Easton, Pa.

"Aerocrete" Roofing For Various Buildings, and Plaster On Metal Lath On Motor Room.  
J. B. EURELL CO., Philadelphia, Pa.

Waterproof Roof Of Service Building.  
PHILIP CAREY CO., Philadelphia, Pa.

Waterproof Roof Of Roll Shop.  
PEN-MAR CO., Baltimore, Md.

Pitch For Wood Block Floor.  
WARREN-EHRET CO., Philadelphia, Pa.

Waterproof Roof Of Motor Room and Passageway From Bar Storage To Mill Building, and Connection to Opening Floor Building.  
WARREN-EHRET CO., Baltimore, Md.

Waterproof Roof Of Assorting Building.  
BENJAMIN FOSTER CO., Philadelphia, Pa.

Metallic Floor Hardener.  
L. SONNEBORN SONS, INC., Baltimore, Md., and New York City.

Paint.  
NEWPORT NEWS SHIPBUILDING & DRY DOCK CO., Newport News, Va.

Terra Cotta Pipe and Fittings.

BALTIMORE CLAY PRODUCTS CO., 2113 Lafayette St., Baltimore, Md.

MONUMENTAL BRICK & SUPPLY CO., 4801 Garrison Blvd., Baltimore, Md.

NORTHEASTERN SUPPLY CO., Baltimore, Md.

Steel Rolling Doors.

THE KINNEAR MANUFACTURING CO., Baltimore, Md., and Columbus, Ohio.

Steel Incline Slide Fire Doors.

WM. E. GAMBRILL & CO., Baltimore, Md.

Steel Swing Type Doors.

DETROIT STEEL PRODUCTS CO., Philadelphia, Pa.

Crescoted Wood Block Floor.

SOUTHERN WOOD PRESERVING CO., Philadelphia, Pa.

Roofing Slag.

Slag For Concrete,

Sand,

Reinforcing Steel,

Dardeclet Thread Bolts, and

Nails & Steel Pipe.

BETHLEHEM STEEL COMPANY.

Cement.

LEHIGH PORTLAND CEMENT CO., Allentown, Pa.

Lumber.

NELSON BOX CORP., Baltimore, Md.



# THE SOUTH'S INDUSTRIAL ADVANCE

Encouraging reports are being received from various parts of the South about new plants and industries from other sections locating here in increasing numbers. Activities of Chambers of Commerce are meeting with definite results and the industrial departments of utility companies and railroads have found their work more effective during the past year than for several previous years, and the outlook decidedly encouraging.

Enterprises contemplating a change in location, are asking about raw materials, labor supply, transportation facilities, power rates, taxes and legislative policies. In addition to this necessary information they are careful to inquire about living conditions, educational, religious and recreational advantages.

Railroads and utilities are cooperating with civic and commercial organizations in compiling industrial surveys.

## Battery Firm Builds Two Southern Plants

Milwaukee Company Establishes Factories In  
Memphis, Tenn., and Dallas, Texas

**T**HE Globe-Union Manufacturing Co. of Milwaukee, Wis., has completed erection of a \$100,000 factory at Dallas, Texas, and is erecting a \$50,000 plant at Memphis, Tenn.

The two Southern projects are part of the 1936 expansion program of the company, which also calls for a new plant at Los Angeles, Cal. Existing plants of the company, which has produced approximately 6,000,000 automobile batteries during the last five years, have a capacity of 8,500 batteries daily.

The Dallas plant will serve dealers and distributors in the states of Texas, Oklahoma, Arkansas, New Mexico and Louisiana. It will be operated in conjunction with branch warehouses at Houston and San Antonio.

The plans for the new building were drawn by Eugene C. Martin, architect. General contract was awarded the Henger Construction Co. for a one-story brick factory building with 15,000 square feet of floor space.

The Dallas plant will provide employment initially for 100 persons. James A. Schwane has been transferred from Milwaukee to be the new factory manager.

The Memphis factory will be opened early in July. The architect for the project is J. T. Wallis. The plant will be approximately 120 by 200 feet, of brick construction. Employment will be provided for 100 persons.

The Globe-Union Manufacturing Company was organized in 1912. In the past seven years, branch factories have been established at Philadelphia, Memphis, Cincinnati and Seattle, and warehouses have been opened in eleven other cities.

## Record Number of New Industries Established Along Illinois Central

1935 Acquisitions Include 76 Different Types  
Of Business And Employ 5,000 Workers

**A** TOTAL of 194 industrial concerns signified their confidence in the future of the Mississippi Valley by establishing along Illinois Central Lines during 1935. This figure compares with 158 in 1934, 112 in 1933, and 72 in 1932.

The 194 industries established last year, and reported by Mark Fenton general industrial agent, include 76 different types of industry, and afford employment for 4,968 workers.

During the depression years of 1930 to 1935 inclusive, a total of 832 industries located in this territory, representing a capital investment of approximately \$36,500,000 and affording employment for 21,550 workers.

The list of new industries extends into eleven states, with a range of products representing practically every kind of business from automobile accessories to work shirts.

## New Plants for Carolinas

Duke Power Company Reports 85 Industrial  
Plants Located In This Territory Last Year

**D**URING 1935 a total of 85 industrial plants was established or expanded in the Piedmont Carolinas territory served by the Duke Power Company, Charlotte, N. C. Fifty-five were built by new concerns, and 30 represented additions to existing establishments.

The diversity observed in the types of industries established was the most striking fact in the industrial development in the area during 1935. Hosiery mills took the lead considering the number of plants involved, 21 having been established. Nine plants were built for the processing and the production of food products. Nine establishments were opened for textile equipment and supplies.

Textile plants, other than hosiery mills, were established to the number of six. Among the other industries were four silk mills, three garment factories, three box plants, two furniture factories, two rug factories, two breweries, and one plant each for making mattresses, cosmetics, luggage, cigars, and various other miscellaneous products.

## Diversity of Industries Secured by Chattanooga

Negotiations Being Conducted With Additional Enterprises Seeking Locations

**A** TOTAL of 20 plants located in Chattanooga during 1935, the Chattanooga Chamber of Commerce, reports. The new plants represent a capital investment of \$797,000, and afford employment for 1,070 persons with an annual payroll of \$765,000.

In addition to the industrial enterprises, 212 firms established offices, warehouses, branches and like facilities here, of which 131 were mercantile and 81 were miscellaneous.

Among the new factories are the following: Barrel staves, bottling, canning, cheese, clothing, excelsior, flour, lithographing, meat packing, overalls, pajamas, paper, potato chips, printing, process yarns, shirts, shoes, steel fabricating, stoves, transfer patterns, uniforms, underwear and woolen cloth.

The Chamber of Commerce is conducting negotiations with more than 40 concerns, which still seek plant locations.

## Cotton In Airport Runways

### Field At Fort McClellan, Ala., One Of Two Airports Where Cotton Membrane Will Be Used To Reinforce Bituminous Surfacing

**T**HE use of cotton as a reinforcing membrane in the bituminous surfacing of runways at Riley Field, Fort McClellan, Ala., and the Municipal Airport at Newark, N. J., has been incorporated in the specifications governing proposed improvements at the two air fields.

Because of the unusually severe winter weather, however, the filling and grading work has been retarded and it is not now anticipated that either site will be ready for surfacing before the latter part of this month or early in May.

Engineers look upon this adaptation of cotton fabric as a natural development, following the convincing results of tested cotton road construction.

In the construction of runways, the use of such a cotton membrane is expected to provide an additional safety factor as important to airport builders and operators as the construction economies assured by the new method.

Major Bernard E. Gray, chief highway engineer, of the Asphalt Institute, New York City, makes the following statement:

"Unquestionably there is a great deal of merit in the incorporation of a suitable cotton membrane in surface treatment work. There are many situations where failure of the bituminous mat is avoided by reason of the reinforcement obtained through the cotton, and I would think that in many airport runway situations this use would be advisable."

Details of the specifications prepared by the City Engineering Department of Newark, N. J., for the runways at the Port Newark Airport, are thus briefly summarized:

Upon the completely stabilized soil surface shall be applied a prime coat of asphalt emulsion, 3/10 to 1/2 gallon per square yard, which shall be permitted to penetrate the surface and set.

Cotton fabrics shall meet the following specifications:

Thread count—12 two-ply yarns per inch in both the warp and filling.

Weight—goods 90 inches wide weighing approximately 5 1/2 oz. per square yard.

Breaking strength—40-pounds in both directions with a plus or minus tolerance of 5%.

The fabric shall be spread longitudinally and tacked down with strips overlapping at least 2 inches.

An application of asphalt emulsion, 1/2 to 3/4 gallon per square yard shall be applied.

The surface shall be immediately covered with base stone, approximately 1 inch thick.

A second application of asphalt emulsion shall then be applied uniformly from a pressure distributor, 1/2 to 3/4 gallon per square yard.

Immediately following the second application of asphalt emulsion the surface shall be uniformly covered by stone chips in sufficient quantity to fill the voids, spread by hand or by means of an improved spreading device and then broomed. The surface shall then be rolled and broomed, preferably with a broom-drag and re-rolled until the stone chips are forced into the voids of the base stone and thoroughly locked and keyed.

Any loose stone chips remaining on the surface shall be evenly distributed by brooming, and a third application of asphalt emulsion shall then be made, 1/2 to 3/4 gallon per square yard, and covered with a uniform layer of stone chips as heretofore. The stone chips shall be broomed and rolled in the same manner as specified in the previous operation, the rolling to continue until the surface is smooth and uniform and fully compacted.

A seal coat shall be applied in not less than 24 hours after the completion of the previous operation. Any loose material in the surface shall be distributed by broom. Asphalt emulsion shall then be applied, 1/2 to 3/4 gallon per square yard, and the surface immediately covered with a light coating of stone chips, even distribution of which shall be obtained by brooming. The surface shall be thoroughly rolled. There shall not be an excess of loose chips on the surface. Practically all particles of stone shall be bound into the surface.

## Form Naval Stores Body

Association To Further Interests Of Producers Of Gum Turpentine, Resin and By-Products

Cordele, Ga.—The American Turpentine Farmers' Association formed last month at a meeting in Jacksonville, Fla., aims to provide improvements through research, education and negotiation in the production of gum turpentine and resin and by-products and to furnish facilities for economical production. Also, it proposes to advertise the products of its members; to establish research laboratories, and to cooperate with and to contribute to the support of existing schools and laboratories whose work furthers research in the naval stores field.

The Association aims to cooperate with State and Federal agencies in the planting, conservation and growing of slash pine and other resinous trees; to encourage its members along such lines in pine tree farming or other agricultural activities affecting the production and distribution of gum turpentine and resin.

A committee was formed to represent the entire industry in Washington in an effort to get the Commodity Credit Corporation to withhold from the market approximately 150,000 casks of spirits turpentine and 200,000 barrels of resin, which are held as collateral for loans made to members of the industry during 1934 and the first half of 1935.

The formation and execution of a plan is favored that will insure a reduction in the production of gum naval stores during 1936.

Officers include:

President—Judge H. Langdale, Valdosta, Ga.

Vice-President—R. M. Newton, Wiggins, Miss.

Secretary-Treasurer—C. P. Kelly, Madison, Fla.

Directors—George W. Hall, Putnam Hall, Fla.; C. P. Kelly, Madison, Fla.; M. C. Stallworth, Mobile, Ala.; R. M. Newton, Wiggins, Miss.; W. L. Rhodes, Estill, S. C.; J. B. Davis, Albany, Ga.; Judge H. Langdale, Valdosta, Ga.; Edgar Dyal, Baxley, Ga.; and James Fowler, Sopperton, Ga.

## Rate Decision Hurtful To Industry In The South

Southern States Council Completes Study On Freight Rate Discriminations

"Not only are freight rates from point to point within the South approximately 30% higher than rates from point to point in the North, but, added to the relatively greater distance from market, is the higher rate applied on goods moving from the South to Eastern markets, as compared with goods moved from points within the North to those markets," the Southern States Council, Nashville, Tenn., declares following completion of a study of freight rates.

The recent Interstate Commerce decision in respect to textile rates will, it is held, work an additional discrimination against the South.

Specifically referring to the recent textile rate decision, the Council pointed out that it costs the Atlanta manufacturer in actual freight charges an average of 4.2% more to ship to six Eastern consuming centers than it does the Boston manufacturer. When the decision goes into effect, the Atlanta manufacturer will pay in actual freight charges 37.2% more.

"In addition to this practical elimination of the Southern manufacturer from the Eastern market, the textile decision also placed the Southern producer at a disadvantage in the middle western market.

"Heretofore, the Atlanta manufacturer, despite the fact that his ton-per-mile rate was 14% higher, had a slight advantage in these middle western markets, due primarily to the fact that he was closer to them than was the Boston manufacturer.

"However, under the new ruling of the I.C.C., the Atlanta shipper will now be placed at a disadvantage in this market, too, for instead of his former advantage, it will cost him nearly 5% more than it will the Boston to reach these points," the Council declared.

### FREIGHT RATE FIGURES AFTER APRIL 8, 1936

MIDDLE-WESTERN MARKETS RATES ON COTTON PIECE GOODS			
	Miles	Present Rates	New Rates
<b>Boston to:</b>			
Akron, Ohio .....	683	86	79
Cleveland, Ohio .....	652	85	77
Columbus, Ohio .....	790	86	87
Detroit, Mich. ....	706	86	82
Chicago, Ill. ....	977	86	97
Indianapolis, Ind. ....	934	86	95
Milwaukee, Wis. ....	954	86	97
St. Louis, Mo. ....	1,174	100 1/2	110
Pittsburgh, Pa. ....	663	86	79
Average .....	837	87 1/2	89
Total freight cost per 100 pounds to the above points .....		\$7.87 1/2	\$8.03
Per cent increase in freight cost to above points due to recent decision .....			1.9%
<b>Atlanta to:</b>			
Akron, Ohio .....	716	83	95
Cleveland, Ohio .....	714	83	95
Columbus, Ohio .....	589	81 1/2	87
Detroit, Mich. ....	729	83	96
Chicago, Ill. ....	729	83	96
Indianapolis, Ind. ....	559	83	85
Milwaukee, Wis. ....	812	87	100
St. Louis, Mo. ....	610	75	88
Pittsburgh, Pa. ....	774	84 1/2	99
Average .....	692	82 1/2	93 1/2
Total freight cost per 100 pounds to the above points .....		\$7.43	\$8.41
Percent increase in freight cost to above points due to recent decision .....			13.2%



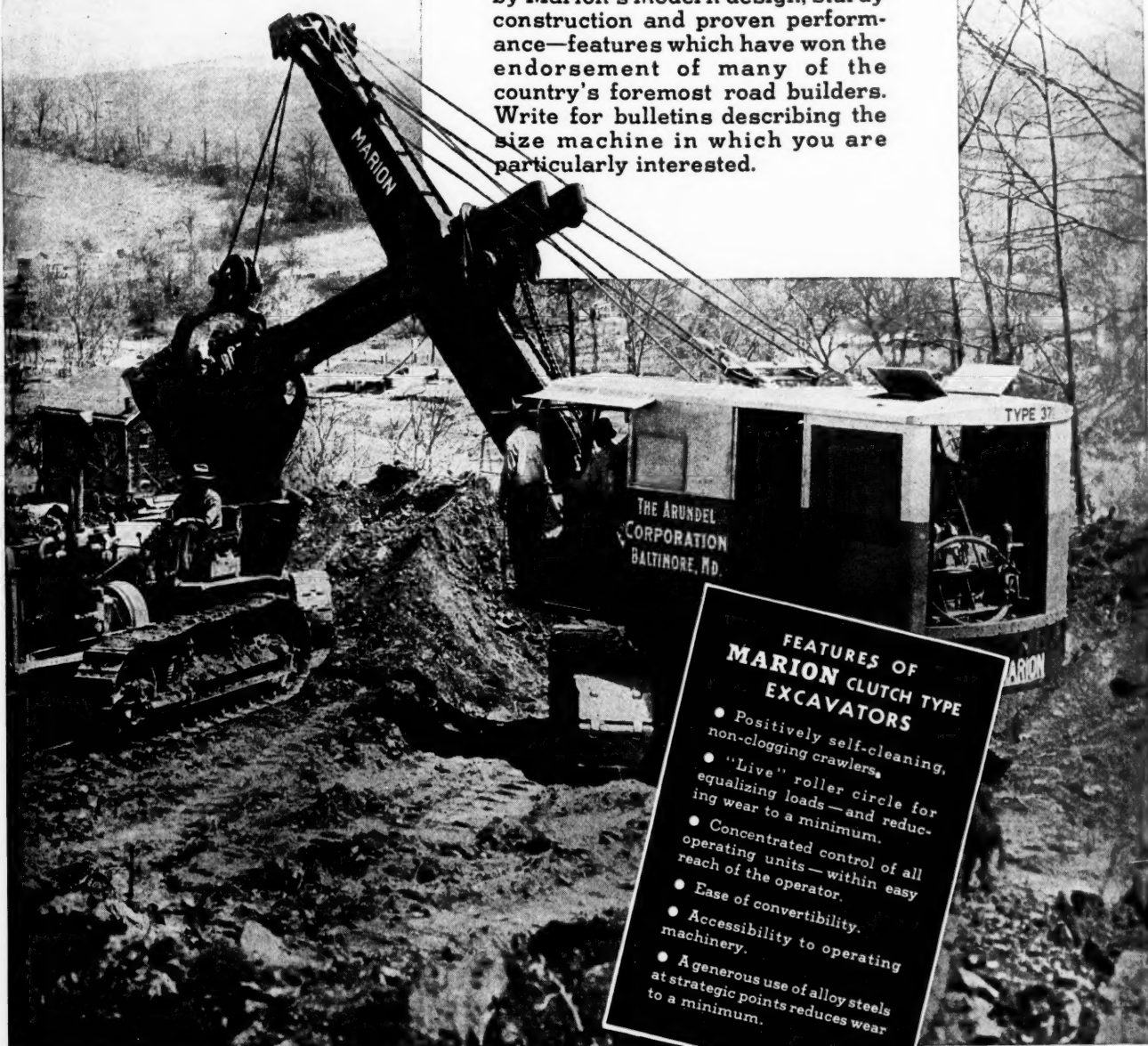
# MARION CLUTCH TYPE EXCAVATORS ARE SPEEDING UP THE WORK ON THE NATION'S HIGHWAYS



From coast to coast... on  
Federal, State and County  
highways... Marion

Clutch Type Excavators are giving  
a new conception of speed, depen-  
dability and ease of operation to  
highway jobs.

Marion Clutch Type Excavators—  
available in sizes from  $\frac{3}{4}$  to  $2\frac{1}{4}$   
cubic yard capacities—are backed  
by Marion's modern design, sturdy  
construction and proven perform-  
ance—features which have won the  
endorsement of many of the  
country's foremost road builders.  
Write for bulletins describing the  
size machine in which you are  
particularly interested.



## FEATURES OF MARION CLUTCH TYPE EXCAVATORS

- Positively self-cleaning,  
non-clogging crawlers.
- "Live" roller circle for  
equalizing loads—and reduc-  
ing wear to a minimum.
- Concentrated control of all  
operating units—within easy  
reach of the operator.
- Ease of convertibility.
- Accessibility to operating  
machinery.
- A generous use of alloy steels  
at strategic points reduces wear  
to a minimum.

# THE MARION STEAM SHOVEL CO., MARION, OHIO, U. S. A.

SHOVELS • CRANES • DRAGLINES • TRENCH SHOVELS • STEAM • GAS • DIESEL • ELECTRIC • DIESEL ELECTRIC • GAS ELECTRIC

• • AN EXCAVATOR FOR EVERY MATERIAL HANDLING JOB • •



# \$233,195,000 CONSTRUCTION AWARDS IN THREE MONTHS

**A**N all-time first quarter high record for Southern construction was set in the first three months of 1936 when contracts aggregating \$233,195,000 were awarded in the sixteen Southern States, covering building, engineering and construction work.

Compared with the total of \$110,566,000 of contracts let in the first quarter of the preceding year, the awards to April 1, 1936, show a gain of 110%.

Compared with the corresponding periods of 1934 and 1933, respectively, the three-month total this year shows gains of 63% and 255%.

Contracts awarded in the South during March, covering all classes of building and construction, amounted to \$60,285,000, the highest total for the third month of the year since 1931. Last month's total represents a gain of more than 100%, compared with the March, 1935, total and of nearly 25% compared with awards in the third month of 1934.

While construction volume during February and March did not keep pace with the record figure established in January, the total of awards in the last two months, despite the severest winter experienced in thirty-five years, was sufficient to make the first quarter of 1936 set a new record for the period.

## Industrial and Engineering Projects Hold First Place

Contracts covering industrial and engineering work ran to \$96,315,000 in the first three months of 1936. This is distinctly noteworthy in that over a long period of years highway-building has led.

Industrial plant construction alone amounted to \$81,336,000. The sharp pick-up registered this year in industrial construction is shown graphically by comparing the gain of 166% in combined industrial and engineering awards this year over last, with the industrial construction gain of 290%.

## Road Work Gains

Highway construction with awards amounting to \$61,177,000 is second in importance in the three-month period. The 1936 total to April 1, compares with \$40,262,000 of road, paving and bridge contracts let in the first quarter of 1935, the gain this year exceeding 50%.

## Public Building Shows Increase

Public building awards, which ran to \$60,284,000, January to March inclusive, represent a gain of more than 200% compared with \$19,928,000 of public construction awards in the first three month's of last year. Recently there have been many contracts placed for Federal structures in all parts of the South costing \$40,000 to \$60,000 each, including both new projects and extensions to existing structures.

## Investing Private Funds On Major Scale

General building activity — largely privately financed — in the first three months of 1936, call for an outlay of \$15,419,000, compared with \$14,288,000 of like awards in the corresponding period of last year.

Dwelling operations in the first quarter of 1936 dropped sharply, the result of the severe winter in the South. The variety of planned residential construction indicates, however, the next few months will see awards made in

## SOUTHERN CONSTRUCTION ACTIVITY March, 1936

### GENERAL BUILDING

Apartments and Hotels	\$2,881,000	\$2,225,000
Association and Fraternal	10,000	105,000
Bank and Office	297,000	340,000
Churches	28,000	627,000
Dwellings	2,125,000	3,481,000
Stores	951,000	547,000
	\$6,292,000	\$7,325,000

### PUBLIC BUILDINGS

City, County, Government and State	\$7,381,000	\$4,451,000
Schools	4,081,000	4,976,000
	\$11,462,000	\$9,427,000

### ROADS, STREETS and PAVING

	\$20,614,000	\$19,528,000
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### INDUSTRIAL and ENGINEERING PROJECTS

Drainage, Dredging and Irrigation	\$ 194,000	\$ 872,000
Filling Stations, Garages, etc.	638,000	685,000
Industrial Plants	18,693,000	17,427,000
Levees, Revetments, Sea Walls, Dikes, Etc.	18,000	550,000
Sewers, Drainage and Waterworks	2,374,000	3,188,000
	\$21,917,000	\$22,722,000

<b>TOTAL</b>	<b>\$60,285,000</b>	<b>\$59,002,000</b>
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volume. Meanwhile, foundations are being completed for various major dwelling projects sponsored by the Federal Government. With the award of general contracts work will get under way this spring on these housing ventures.

Throughout the South generally a pick-up is noted in apartment house and hotel construction, featured by the erection of costly new projects and by the building of additions to existing structures.

(Continued on page 44)

## SOUTHERN CONSTRUCTION ACTIVITY First Three Months, 1936

	Contracts Awarded	Contracts to be Awarded
<b>General Building</b>		
Apartments and Hotels	\$4,507,000	\$7,050,000
Association and Fraternal	166,000	960,000
Bank and Office	650,000	1,155,000
Churches	494,000	2,426,000
Dwellings	6,310,000	7,214,000
Stores	3,292,000	4,563,000
	\$15,419,000	\$23,368,000
<b>Public Buildings</b>		
City, County, Government and State	\$36,739,000	\$58,976,000
Schools	23,545,000	25,472,000
	\$60,284,000	\$84,448,000
<b>Roads, Streets and Paving</b>	<b>\$61,177,000</b>	<b>\$75,536,000</b>
<b>Industrial and Engineering Projects</b>		
Drainage, Dredging and Irrigation	\$1,866,000	\$60,498,000
Filling Stations, Garages, etc.	1,212,000	1,488,000
Industrial Plants	81,636,000	119,018,000
Levees, Revetments, Seawalls, Dikes, etc.	2,682,000	1,150,000
Sewers, Drainage and Waterworks	8,919,000	31,394,000
	\$96,315,000	\$213,548,000
<b>Total</b>	<b>\$233,195,000</b>	<b>\$396,900,000</b>

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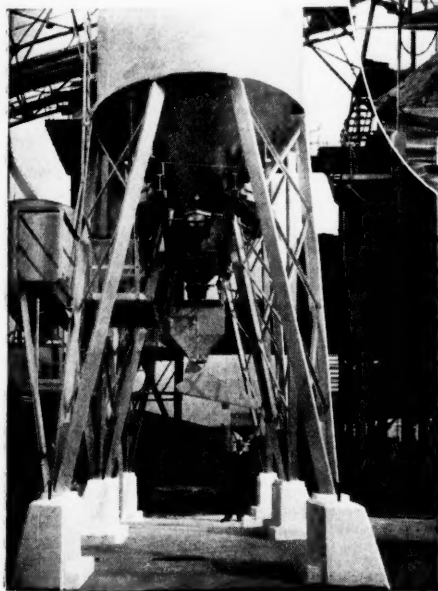
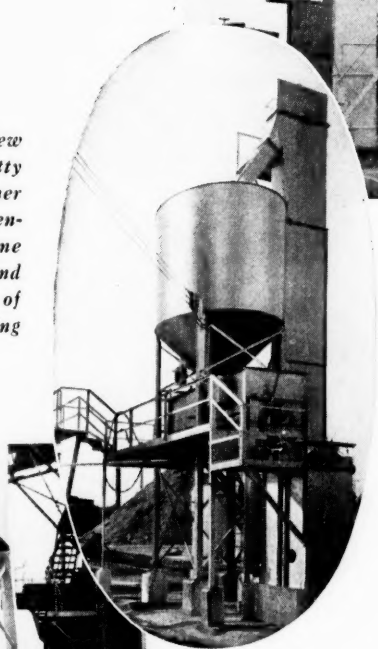
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OR

# Modern Lime Putty Plant of STEEL Construction

Upper right: General view of Brooks-Taylor lime putty plant built for the Warner Co. at Wilmington, Del. Center: Close-up of the lime elevator, storage bin and slaker. Below: Bottom of putty storage tanks showing batcher.



## Finished Putty Stored in WELDED STEEL TANKS

Lime putty has been used for centuries in making plaster, brick mortar, stucco, etc. The ordinary method of producing it has always been to slake quick lime and age it during the construction of the particular job on which it is used. The speed of present day construction has made it impossible to do this.

The accompanying illustrations show a standard type of plant used by building material supply firms to produce and store aged lime putty which can be delivered within the hour to construction jobs, ready for use. This particular plant utilizes the Brooks-Taylor process. The finished putty is held in air-tight welded steel tanks to maintain the proper consistency.

We are equipped to build complete plants, as well as standard and special tanks and bins for the storage and handling of liquids and materials of all kinds. Write our nearest office for information or quotations.

## CHICAGO BRIDGE & IRON WORKS

Birmingham .....	1530 North Fifth St.	New York .....	3313-165 Broadway Bldg.	Philadelphia .....	1619-1700 Walnut Street Bldg.
Dallas .....	1408 Dallas Athletic Club Bldg.	Cleveland .....	2216 Rockefeller Bldg.	Detroit .....	1510 Lafayette Bldg.
Houston .....	2919 Main Street	Chicago .....	2106 Old Colony Bldg.	Boston .....	1510 Consolidated Gas Bldg.
Tulsa .....	1611 Thompson Bldg.	San Francisco .....	1040 Rialto Bldg.	Havana .....	Edificio Abreu 402

B-446

Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PA.

## Construction Record

(Continued from page 42)

tures, as well as modernization work on a major scale. To April 1, awards for such projects totalled \$4,507,000, as against \$2,116,000 in the first three months of 1935.

### Store Building Up

Store construction with \$3,292,000 of awards, January to March, 1936, compares with \$3,096,000 of contracts let in the first quarter of 1935. In addition to the building of fine new structures, representing the last word in design, layout and facilities, hundreds of thou-

sands of dollars are being expended for new lighting facilities, modern high-speed elevators, escalators, new show windows, sprinkler systems, air-conditioning systems, and the like.

Every classification of general building this year shows a gain as compared with last, with the sole exception of dwelling. This class of building—almost financed entirely with private funds—is a good barometer of business conditions, definitely indicating the improvement apparent throughout the States from Maryland to Texas generally. The heavy investment of private funds being made in new and improved commercial facilities is noteworthy.

## Notable Industrial Plants Under Way

Numerous notable industrial enterprises go to make up the impressive list of the work now under construction, recently completed and projected. For three years there has been a sharp increase in industrial building operations. While a survey of current activity reveals a broad diversity of enterprises, turning out a wide variety of products, the growing importance of the South as a center of chemical manufacturing is strikingly apparent.

## Some Representative Projects In The South Last Month

### Proposed Construction

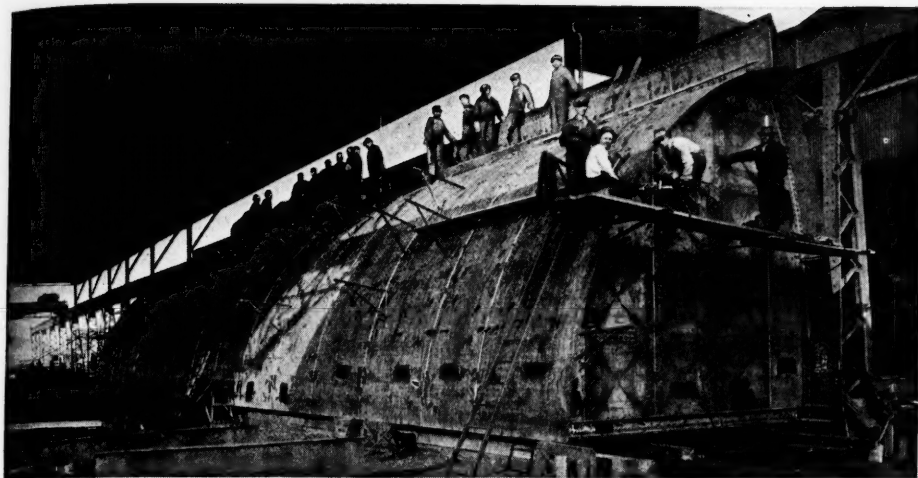
Ala., Tuscaloosa—Veterans' Administration	
Proposed addition	\$400,000
Ark., Knoxville Junction — Missouri Pacific Lines, St. Louis, Mo.	
Track between Spadra and Knoxville Junction	260,000
Ark., Little Rock—City Council	
Soon award contracts for waterworks improvements	3,500,000
Ark., Little Rock—Municipal Airport	
Hangar, Administration building, runways, etc.	160,000
Ark., West Memphis—Arkansas Jockey Club	
Horse racing plant; Estes W. Mann, Archt.	250,000
Fla., Miami—Southern Bell Telephone & Telegraph Co.	
Improvements in Miami	500,000
Ga., Atlanta—National Biscuit Co.	
Office and warehouse	750,000
Ga., LaGrange—LaGrange Hospital	
3-story building; Daniell & Beutell, Atlanta, Archts.	200,000
Ky., Louisville—Fourth Ave. Realty Co.	
Improve Martin-Brown Building; Warren & Ronald, Engrs.	100,000
Ky., Scottsville—City, Mayor R. O. Huntsman	
Power plant	150,000
La., Lake Charles—Calcasieu Parish School Board	
School building improvements; Herman J. Duncan, Alexandria, Archt.	175,000
Miss., Gulfport—Board of Supervisors	
Seawall and harbor projects	350,000
Mo., Kansas City—C. C. Nigro	
Theatre and shop building; Charles Williams, Archt.	100,000
N. C., Asheville—Frank Loughran	
Erect 2-story store building	150,000
N. C., Charlotte—Charlotte Municipal Airport	
Administration building, general airport improvements	250,000
N. C., Concord—Cabarrus County Hospital	
New building; M. R. Marsh, Charlotte, Archt.	150,000
Okla., Ada—Aldridge Hotel Co., Wewekoa	
Hotel addition	200,000
Okla., Enid—Enid Ice & Fuel Co.	
Ice plant	100,000
Okla., Muskogee—Kansas, Oklahoma & Gulf Railway Co.	
Improvements to line	485,000
S. C., Greenville—Treasury Dept.	
Federal building	525,000
Tenn., Columbia—City	
Voted bonds for power plant	350,000
Tenn., Kingsport—City	
School improvements	300,000
Tenn., Memphis—Baptist Hospital	
New building	200,000
Tenn., Memphis—Sears, Roebuck & Co.	
Air-conditioning store and erecting filling station	150,000
Tenn., Memphis—Frisco Lines	
General improvement program through the South and Southwest	2,265,000
Texas, Wichita Falls—Wichita Falls Jr. College District	
New building; Voelcker & Dixon, Archt.	350,000
Tex., Bells—Balfalls Light & Power Co.	
Rural power lines	452,000
Tex., Brownsville—Aransas Compress Co.	
Purchase site for compress	200,000
Tex., Corpus Christi—Treasury Dept.	
Court House and Post Office	138,000
Tex., Fort Worth—Board of Education	
North side senior high school; W. C. Clarkson & Son, Archts.	420,000
Tex., Houston—City, Mayor Oscar F. Hocumbe	
Convention Hall and exposition building; Alfred C. Finn, Archt.	1,000,000
Tex., Houston—H. C. House Warehouse	
Addition; Jonas & Tabor, Archts.	100,000
Tex., Houston—T. N. McNeill	
Apartment building	200,000
Tex., Houston—West Production Co.	
Terminal building; Joseph Finger, Inc., Archt.	100,000
Tex., Palacios—C. L. Kennedy, Houston	
Spanish-type hotel	150,000
Tex., Tyler—East Texas Utility Corp.	
Rural electric power lines	214,000
Tex., Wichita Falls—Wichita Falls State Hospital	

Ward building; Voelcker & Dixon, Inc., Archts.	125,000
Va., Arlington—Arlington County School Board	
Junior high school	250,000
W. Va., Huntington—Johnson Memorial M. E. Church	
Rebuilding church; H. M. King, Louisville, Ky., Archt.	200,000

### Contracts Awarded

Ark., Crossett—Crossett Lumber Co.	
Kraft pulp and paper mill; Rust Engineering Co., Pittsburgh, Pa., Gen. Contr.	\$4,000,000
D. C., Washington—Washington Sanitary Improvement Co.	
Apartment buildings; Clarence A. Gosnell, Inc., Contr.	105,000
D. C., Washington—Cafritz Construction Co.	
8-story apartment building	700,000
D. C., Washington—District Commissioners	
Anacostia Jr. High School; Highway Engineering & Construction Co., Contr.	400,000
Fla., Miami—Clayton Shappell	
Hotel; Charles P. Nieder, Archt.	150,000
Fla., Miami Beach—Emerman & Co.	
Hotel; Henry Hohaus, Archt. (est.)	100,000
Ky., Louisville—City	
Mill Creek sewer; Lombardi Co., Inc., Philadelphia, Pa., Gen. Contr.	605,000
Md., Baltimore—Board of Awards	
Sanitary sewers; Louis Aiello & Son, Contr.	158,000
Mo., Excelsior Springs—City	
Auditorium; MacDonald Construction Co., St. Louis, Gen. Contr.	430,000
Mo., St. Louis—City	
Water pipeline; Bethlehem Steel Co., Bethlehem, Pa., furnishing pipe; Martin & Reilly have contract for laying pipe	700,000
N. C., Concord—City	
Waterworks improvements; Blythe Bros., Charlotte, Gen. Contr.	125,000
N. C., Greensboro—City	
Sanitary sewer outfall; A. G. Pinkston & Co., Norfolk, Contr.	237,000
Okla., Tulsa—Rose Hill Burial Park	
Constructin mausoleum	500,000
Okla., Tulsa—Western State Grocery Co.	
Second unit of warehouse and office structure; W. R. Grimshaw Co., Contr.	250,000
S. C., Anderson—City	
Sewerage disposal plant; C. M. Guest & Sons, Brissey Lumber Co., and Boile Road and Bridge Co., Contrs.	150,000
S. C., Columbia—South Carolina State Hospital	
Ward building; J. A. Jones Construction Co., Charlotte, Gen. Contr.	325,000
Tenn., Memphis—Treasury Dept.	
Marine hospital; James I. Barnes, Springfield, Mo., Contr.	400,000
Texas—Columbia Gas & Electric Corp., New York City	
Pipeline connecting Texas gas field and Detroit, Mich.	3,500,000
Tex., Canton—Van Zandt County	
Court House; L. W. Wentzel, Gen. Contr.	125,000
Tex., Dallas—Hillcrest Memorial Cemetery	
Mausoleum; Henger Construction Co., General Contr.	500,000
Tex., Denton—North State Teachers College	
Library; A. J. Rife Construction Co., Dallas, Gen. Contr.	175,000
Tex., Fort Worth—Municipal Airport	
Terminal building improvements; Quissle & Andrews, Gen. Contr.	145,000
Tex., Houston—City	
East End senior high school; Southwestern Construction Co., Contr.	485,000
Tex., Houston—Shell Petroleum Corp.	
Research laboratory	425,000
Tex., Livingston—Board of Trustees, Livingston Free School Corp.	
High school and auditorium; M. M. Weaver, Center, Gen. Contr.	115,000
Tex., Nederland—Pure Oil Co.	
Doubling capacity of Smith's Bluff Refinery	2,000,000
Va., Charlottesville—Treasury Dept.	
Extending and remodeling post office; James I. Barnes, Springfield, Mo., Contr.	161,000
W. Va., Huntington—Standard Ultramarine Co.	
Plant extension (est.)	100,000





Drum Gates, they are called. This one 100' long by 20' high being fitted together in our Roanoke Plant before shipment to the Panama Canal Zone. Our order was for four of these gates each weighing about 350 tons.

## Gates on Locks

Generally it's the other way. But there are gates and gates. Also different kinds of locks.

The Drum Gate above is 100 feet long and weighs 350 tons in place. You might say it is an enormous valve raising and lowering to control the flow of water from the new Madden Dam into the Panama Canal.

The Harvey Canal Lock Gates are of course the usual type of steel gates for canal locks but required, the same as the Drum Gates, the most careful work for exact alignment and watertight contacts. Our workmanship in both cases was complimented.

For nearly forty years we have been building steel structures, bridges, buildings, etc., of all kinds and sizes. We can assure you careful attention and handling on your steel requirements of whatever nature and size.

### VIRGINIA BRIDGE COMPANY

Roanoke, Birmingham, Memphis, Atlanta, New York,  
Los Angeles, Charlotte, Austin, El Paso

Plants at Roanoke—Birmingham—Memphis

# VIRGINIA BRIDGE



Lock Gates for the Harvey, La., Canal of the New Intracoastal Waterway between New Orleans and Houston. Eight Gates in all, four 34' high by 43' wide and four 17' high by 43' wide.

# IRON, STEEL AND METAL MARKET

**I**N the last week of March steel operations rose to 62 per cent of capacity, which was 15 per cent over the previous week and 44 per cent over the production of the same week of 1935.

The demand for light steel has been accelerated by orders for automobiles, refrigerators, furniture, etc. In heavier lines there are good prospects for more railroad buying, the Norfolk & Western Railway having just placed an order for 20,000 tons of rails and 500 tons of track accessories, and it is expected Western roads—the Rock Island, Southern Pacific and others—will be in the market for heavy tonnages of rails and structural steel for bridges.

Inquiries are being placed also for refrigerator cars from the Pacific Coast.

## Flood Damage To Boost Demand

While recent floods slowed down production in the Pittsburgh district, the delay has been temporary. It is estimated that probably 100,000 tons of steel will be needed to repair the damage by floods throughout the 13 states which were affected.

In operating at its present rate of production, the industry attains the best output in the last six years, and it would not be surprising if the demand very soon put operations up possibly to as much as 70 per cent. The industry as a whole is in better condition to produce a higher quality at lower cost than it has been for a long time.

## Continue Plant Improvements

Improvements in plants are still going on and in putting the financial house in better order, book values have been reduced. The U. S. Steel Corporation marked off more than \$88,000,000 from earned surplus for obsolescence. This has been a constant policy of the corporation since its organization and the value of its properties has now been brought to a lower point on its books than at any time in the last 35 years.

In the line of improvements to plants, the National Steel Co. is spending nearly \$15,000,000 for plant and equipment. It expects to finish the work by October 1. Mr. Ernest T. Weir recently stated when this is done the company will be able effectively to maintain and improve its competitive position.

The Republic Steel Corporation ended the year 1935 with net sales of more

than \$137,000,000, which was an increase of nearly \$40,000,000 over the year before. This resulted in net profits, after all charges, of \$4,455,000 as compared with a net loss in 1934 of \$3,459,000.

Of the \$12,000,000 authorized for plant improvement, it is of interest to the South as to how much of this may be spent in the Birmingham district. No announcement has been forthcoming so far as to what may be undertaken in this direction.

The Bethlehem Steel Co., which is building an extensive addition to its tin plate department at Sparrows Point, Maryland, for the production of cold-rolled tin plate, expects the work to be finished by July 1.

This addition and the new continuous sheet, strip and plate mill at the Lackawanna plant, are the most important improvements undertaken by the company during 1935.

In a letter to employees, President Grace stated that, "The present situation of the company gives reason for a fuller degree of encouragement than has existed for several years. \* \* \* We are now employing virtually our normal force, having a payroll of about 70,000, with wage rates at the level of our most prosperous years. \* \* \* Our situation was never more promising."

## Birmingham District Looks Up

In the Birmingham district, the rail mills of the Tennessee Coal, Iron & Railroad Co., now have a backlog of orders sufficient for another month's operation, and the outlook is favorable for several months ahead. President J. L. Perry reports business thus far in 1936 shows a substantial gain over the same period of 1935.

The Gulf States Steel Co. made a very favorable showing in its annual statement, transferring a loss which appeared in 1934 of \$58,000, to a net profit of \$141,000 in 1935. The physical property of the company was maintained at a high standard and the average number of employees was increased by the end of the year more than 25 per cent above the year before.

Pig iron production in the district is well sustained, twelve blast furnaces being in operation. It is quite likely that the output for the first six months of this year will surpass any similar period since 1930.

The American Institute of Steel Construction announces that the volume of

fabricated structural steel sold during 1935 was not much larger than the volume sold in 1934. In a report issued by the Institute, it is stated: "Public works failed to provide as large a market for fabricated structural steel during 1935 as it did in 1934. \* \* \* The improvement in the sale of fabricated structural steel in 1935 resulted chiefly from the increased demand for industrial buildings." This is significant as indicating the determination of industry to put its physical house in order to meet increasing demand when it comes.

## Steel Labor Rate Above Average

The American Iron & Steel Institute refers in a press release to the yearly wages of employees of the steel industry as having "averaged consistently above the wages received by employees of all other manufacturing industries over the past 56 years. Iron and steel plant wages increased 340 per cent from 1879 to 1929—from \$394 a year to \$1,742. Wages of employees in other manufacturing industries increased 275 per cent in the same period or from \$345 to \$1,294. In 1935, the average annual wage in the steel industry was \$1,184, compared with \$1,087 in all other industries." The report adds—"Steel operations in 1935 were only 62 per cent of 1929, but the total number of employees last year was 90 per cent of the 1929 total. Employment in all other manufacturing industries during 1935 was only 77 per cent of 1929."

## Legislation Pending

The Wheeler Anti-Basing Point Bill is meeting with strong opposition from steel interests. Other industries have joined in the protest. Hearings have been going on before the Senate Interstate Commerce Committee. Among the objections urged by steel executives, in addition to that of confining competition within restricted limits, is one that the bill probably would cause the "ruin of numerous small producing units located in communities removed from advantageous markets."

Authorities point out that the basing point method is "a convenience to producers and buyers alike, and that the industry as a whole not only makes no profit from freight charges, but that there actually is a large excess of freight charges in favor of customers under the basing point method."

# "A.W." "70-90" STEEL

**Increases your pay load and lowers your operating costs . . . by reducing weight with no loss of strength**

"A.W." "70-90" Steel is a High Tensile Steel. It is distinct from any other steel of this general type. It has properties which are exclusively its own. It makes possible a saving in weight up to 40%. And its cost is low.

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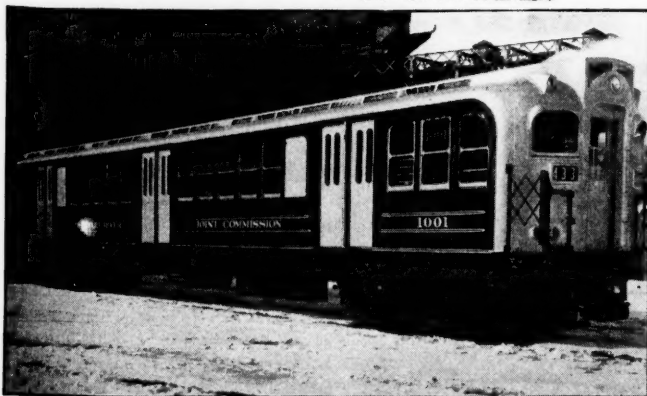
	Grade A:	Grade B:
Yield Point (lb. per sq. in.)	70,000 min.	50,000 min.
Tensile Strength (lb. per sq. in.)	90,000 min.	65,000 min.
Elongation (per cent in 2 in.)	20 min.	25 min.

**CORROSION RESISTANCE:** Superior to all ordinary steels.

**WELDABILITY:** Excellent. No treatment to prevent brittleness required.

**FABRICATION:** Lends itself readily to difficult cold forming and cold flanging.

Photograph shows one of the High Speed Rail Cars, manufactured for the Delaware River Joint Commission at The J. G. Brill plant of the American Car and Foundry Company. Vital structural parts were made of "A.W." "70-90" High Tensile Steel. Intricate forming was achieved without difficulty in spite of the great physical strength of "A.W." "70-90" Steel.



In soliciting your permission to discuss with you the possibilities of "A.W." "70-90" Steel, we offer you the competent assistance of our engineering department.

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110 YEARS' IRON- AND STEEL-MAKING EXPERIENCE

APRIL NINETEEN THIRTY-SIX



# OPPORTUNITIES FOR USE OF SOUTHERN PINE

## Speakers at Beaumont Meeting Envision Development of Series of Integrated Industries Using Wood

**A**N array of scientific working knowledge of the paper-making industry, the production of rayon, lumbering and naval stores was displayed at the Wood Uses Conference, held last month in Beaumont, Tex.

Texas, Louisiana, Arkansas and Missouri were represented at the two-day session, addressed by such authorities on wood, as Dr. Charles H. Herty, research scientist, Savannah, Ga.; Capt. I. C. Eldredge, regional survey director, U. S. Forest Service; Cranston Williams, secretary-manager, Southern Newspaper Publishers Association, Chattanooga, Tenn., and others.

Research and progress in reforestation, conservation of wood and its preservation were discussed.

Dissatisfaction at the proposed reduction in the Federal grant of from \$250,000 to \$150,000, was expressed in a resolution.

It was the consensus of opinion that the economic stability of the Southern states is dependent to a large extent on the development of the pine forests, and that the manufacture of newsprint according to the proposals advocated by Dr. Herty will have an increasingly important part to play in that connection.

In urging a Southern newsprint plant financed by Southern capital, Dr. Herty, submitted comparative costs for a ton of newsprint, omitting profits. He said the average price paid by twenty-four U. S. mills, as reported by NRA, was \$47.50 per ton, using Canadian pulp, contrasted with an estimated \$24.55 per ton, delivered in New York City, utilizing Southern pulp. He pointed out that an increasing percentage of Canadian pulp goes to Europe annually, and that this will ultimately have a bearing on the price U. S. consumers pay.

Exhibiting pieces of wood which had been eaten away by termites, fungi and marine borers until they resembled cork or sponge more than lumber, R. S. Manley, president, American Wood Preservers Association, Chicago, Ill., in an address on the methods of wood preservation, presented a strong case for treating lumber to further timber conservation.

He made the following analysis:

"Consider that during the years 1909 to 1934 inclusive, a total of 5,083 million cubic feet of wood was preserved. If the life of this wood was increased but three times its untreated life, you can see that over ten billion feet of lumber was thus definitely saved from the ravages of decay, insects and borers. This would represent the cut from 8 million acres of timber, scaling 15,000 feet per acre. Actually, however, the increased life is much greater than three times."

In emphasizing the really remarkable conservation of timber through preservation, Mr. Manley presented a statement

credited to C. C. Cook, maintenance of way engineer, of the Baltimore and Ohio Railroad, who estimates that the railroads of the United States through the use of preserved cross ties are saving the impressive total of \$146,000 daily. Railroads, he declared, which required 400 ties per mile per year before standardizing on preserved ties now need but approximately 100 ties per mile annually.

Cranston Williams, of the Southern Newspaper Publishers Association, Chattanooga, Tenn., announced that Southern publishers had prepared contracts guaranteeing the purchase of a minimum of 60,000 tons of newsprint annually, for five years from the first mill constructed to use Southern pine.

## National Lumber Body Meets In Chicago April 23-25

In view of the improved outlook for industry in general, and of forest industries in particular, the annual meeting of the National Lumber Manufacturers' Association, which will be held at the Blackstone Hotel, Chicago, Ill., April 23 to 25, promises to be interesting.

Emphasis will be placed upon new uses for lumber products.

## Improving Lumber Mill

Brewton, Ala.—Improvements recently completed and under way at the T. R. Miller Mill Co. plant will provide one of the most modern sawmills in this district.

The work includes the installation of four tracks or two kilns, cross-circulation type, designed and made by the Standard Dry Kiln Co., of Indianapolis, Ind., which furnished the machinery and designed the buildings, the installation being handled by the owners.

The power plant is being remodeled, calling for the installation of two Hedges-Walsh-Weidner 600 horsepower water tube boilers.

The circular type saw mill is being remodeled, and an 8-foot band rig, made by the Allis-Chalmers Manufacturing Co., of Milwaukee, Wis., is being installed.

## Improved Outlook Seen for Hardwood Industry

### Speakers At Annual Convention Point Out Opportunities Ahead — Hardwoods Holding Own Against Substitutes

New Orleans, La.—"Conservation and forestry are here to stay," declared E. R. Linn, secretary-manager of the Southern Hardwood Producers, Inc., in his report to the first annual convention of the group. "We are cooperating with the Forest Survey to bring out the facts about Southern hardwoods for your industry. We need this data to do a better job of promoting Southern hardwoods."

Mr. Linn's statements coincide with the factual information presented in "Forest Research Needs—In the Southern Bottom-Land Hardwood Region" published in the MANUFACTURERS RECORD for March.

G. G. White, field research engineer of the Association, reported that the field promotion work of the group was started in January to counteract some of the tendency to substitute other materials for hardwood and added that "we have kept in use at least 2,000,000 feet of Southern hardwoods, that were about to be replaced, and we have increased the use by at least another 2,000,000 feet."

C. D. Hudson, manager of the National Wooden Box Association, told the lumbermen that the wooden box and crate industry "has held its place during the depression as the second largest customer of the lumber industry, using approximately one-sixth of the entire lumber cut."

"The South is the logical breeding ground for America's movement in modern furniture arts," Miss M. K. Sironen, style counsellor of the Grand Rapids Furniture Exposition, told the hardwood producers.

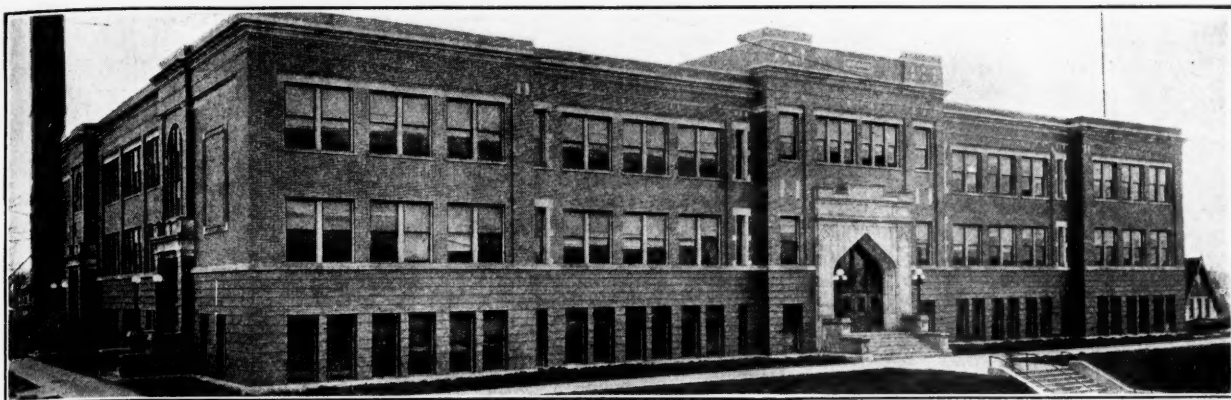
"It is my firm belief," she said, "that the South will be called upon to refurnish and newly furnish a large number of homes when industrial revival permits of re-establishment of homes."

C. C. Sheppard told the group there are \$50,000,000 worth of public works projects in the South on which hardwoods can be used.

W. R. Jones, of Louisville, Ky., was elected president of the Southern Hardwood Producers, Inc., at its first annual convention here. F. W. Schatz, of Helena, Ark., was elected vice-president; J. W. Welsh, of Memphis, Tenn., treasurer; E. R. Linn, of New Orleans, secretary-manager, and C. E. Miller, of New Orleans, assistant secretary.

New directors were elected as follows:

K. L. Emmons, Memphis; F. W. Schatz; Mr. Welsh; Mr. Jones; John Avery, Shreveport; C. C. Sheppard, of Clarks, La.; B. M. Johnson, Shreveport; John Bailey, Laurel, Miss.; Lee Robinson, Mobile, Ala.; D. C. Wilson, Perry, Fla.; Blucher Blair, Blountston, Fla.; R. A. Huffstetler, and H. Brooks Sale, both of Columbia, S. C.



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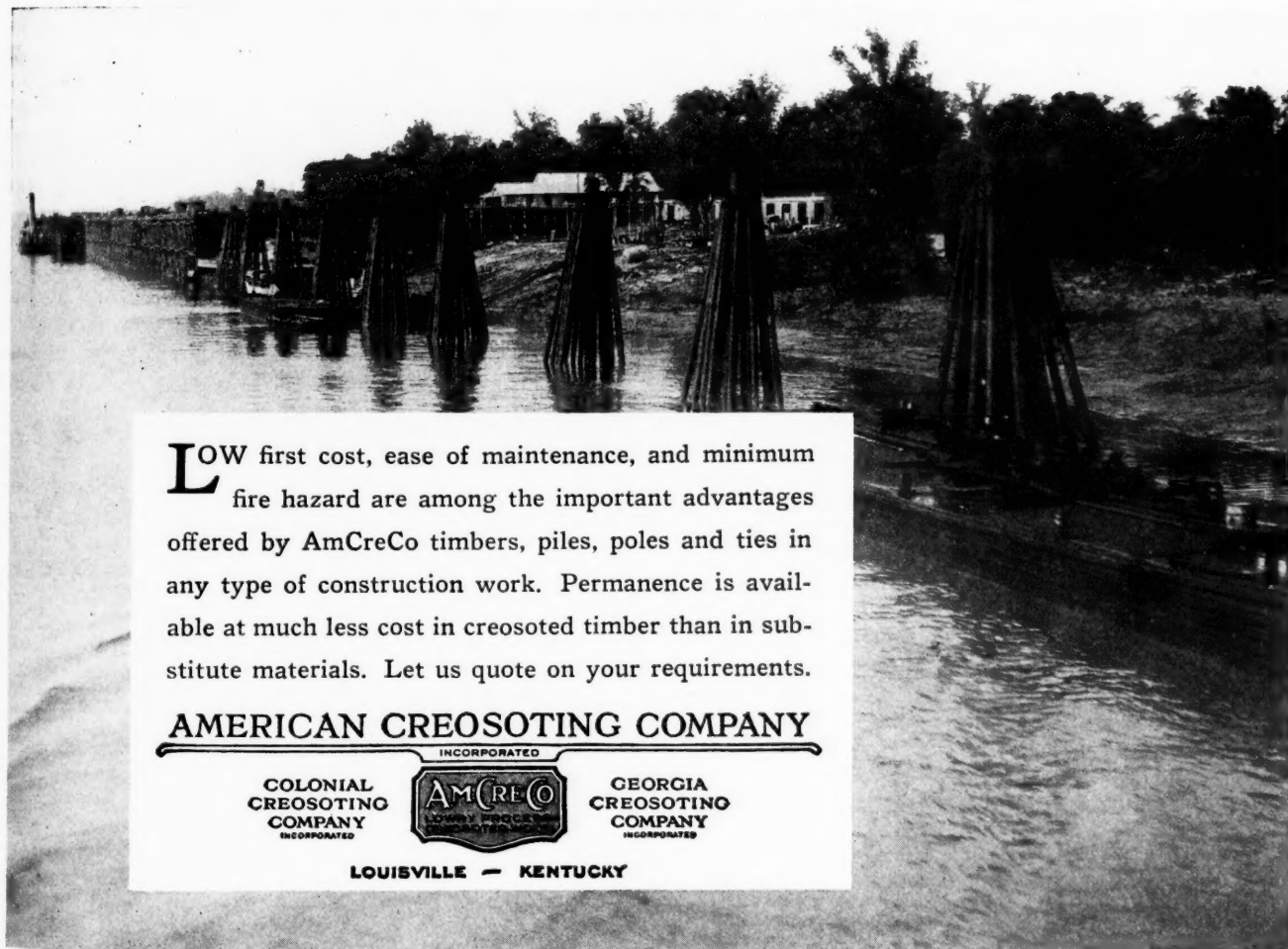
St. Louis



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LOUISVILLE — KENTUCKY

# GOOD ROADS AND MOTOR TRANSPORT

## Plans Road Experiments

**North Carolina To Use Cotton In Surfacing and Salt and Calcium Chloride in Treating Subgrades and Surfaces**

Raleigh, N. C.—Experiments in the use of cotton fabric for reinforcing surface treated roads and calcium chloride and salt for stabilization of base material and subgrade will be undertaken this spring by the State Highway and Public Commission, under the direction of W. Vance Baise, state highway engineer.

The first project to be put under way involves the use of cotton fabric. It will be located on Route 403 between Clinton and Faison. Representatives of the Bureau of Public Roads are now making tests of the subgrade and base material on this stretch. Indications are that preliminary work will be completed so that contract for the project may be let shortly.

The project is approximately 15 miles long, and it is likely that cotton fabric will be used on about 50% of it.

No other locations have as yet been definitely decided upon for cotton fabric experiments, but plans called for using the material for reinforcing not only some new surface treated sections but for use in reinforcing some roads previously surface treated and which are included in schedules this spring calling for retreating.

## \$1,000,000 Additional Maintenance Expenditure Necessary In Virginia

Approximately \$1,000,000 worth of damage over and above regular maintenance allotments is indicated as the cost of winter's damage to Virginia roads, reports C. S. Mullen, chief engineer, Department of Highways.

It will not be necessary to slight maintenance or construction on secondary roads to carry out necessary repairs on the primary system. Of 4,000 miles of primary roads, constructed of sand-clay, soil and gravel, and bituminous treated, approximately 30% were damaged. The repairs will be undertaken with regular maintenance force of the Commission, supplemented with additional day labor employed locally.

Some increases in bituminous material, stone, gravel and sand, over and above the quantities ordinarily used will be required.

## \$1,423,000 To Repair West Virginia's 33,000 Miles On Two Systems

Primary roads were hard hit by the severe weather, according to Mortimer W. Smith, chief engineer, of the West Virginia State Roads Commission.

For the remaining three months of the present fiscal year, \$750,000 is available for the repair and maintenance of primary roads, totaling 4,693 miles and \$673,000 for the repair and maintenance of 29,120 miles of secondary roads.

In repairing the primary roads, the work required will be classified by the District Engineer and the repairs most urgently needed will be accomplished first. With the funds available for the remainder of the fiscal year, only the necessary work can be accomplished. The painting of guard rails and roadside development in connection with maintenance will necessarily be delayed until the roads are in a safe and comfortable condition for traveling.

## \$4,000,000 Farm-To-Market Roads For N. Carolina

In carrying out the road-building program with funds made available by the regular Federal Aid allocation and PWA emergency grants, contracts aggregating \$1,000,000 per month will be let by the North Carolina State Highway and Public Works Commission, W. Vance Baise, State Highway Engineer, Raleigh.

It expects to spend approximately \$4,000,000 over and above its regular maintenance appropriation in improving the general condition of farm-to-market routes.

## \$2,000,000 Kentucky Market Roads Fund

The sum of \$2,000,000, apportioned to 78 counties of the State, will be expended by the Kentucky State Highway Department, Frankfort, Ben Johnson, chairman.

## Virginia's First Lighted Highway Open

**T**O awaken public interest in accident reduction by properly lighting the heavily travelled highways, the Virginia State-Wide Safety Conference, recently opened an experimental mile of lighted state highway between Richmond and Petersburg.

The lighting is accomplished by the use of 10,000-lumen horizontal tube sodium vapor units manufactured by the General Electric Co., Schenectady, N. Y. The entire construction work was han-

dled by the Virginia Electric & Power Co., Richmond.

The lighting units are spaced 200 feet apart and staggered, the lamp being mounted about 25 feet above the roadway. This system was designed for a 4-lane highway, the units extending 4 feet over the edge of the concrete. There are 22 units mounted on 10-foot brackets fastened to creosoted pine poles.

A series circuit operates the lights, with one conductor on each side of the road.





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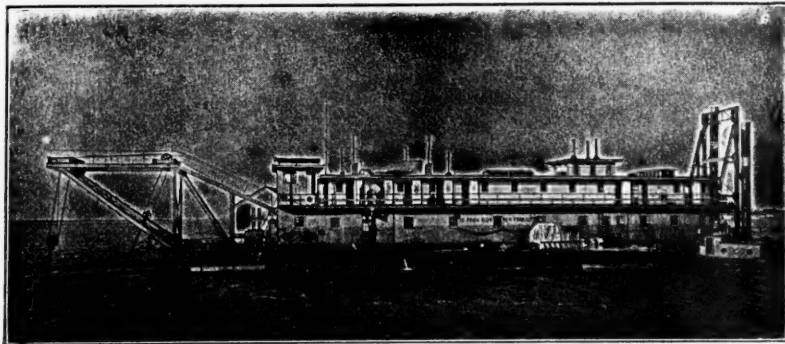
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We are especially equipped to execute all kinds of dredging, reclamation and port works in Southern waters.

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## Cooling Water Major Task In Distilleries

### Modern Cooling System Permits Kentucky Plant To Operate Year-Round

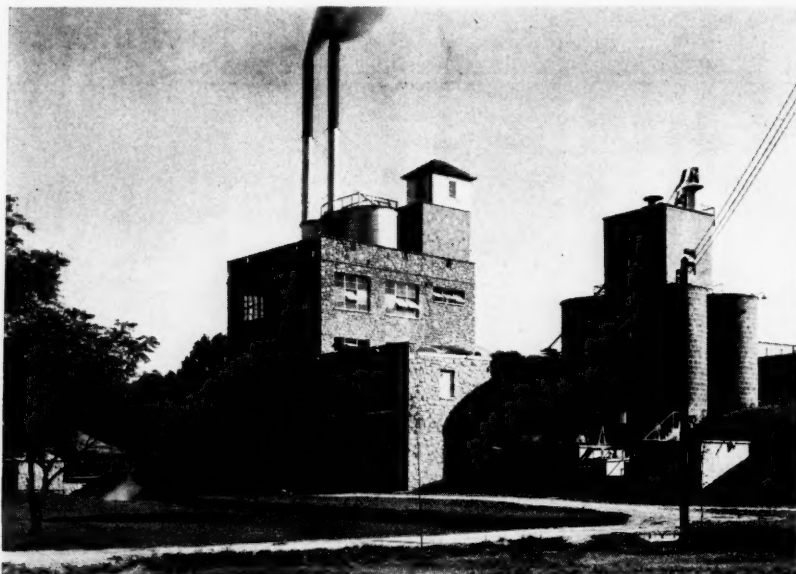
**M**ILLIONS of dollars are being invested in new distilleries and the expansion of existing plants in Kentucky, creating a demand for materials and machinery turned out by industries widely scattered through the country, and providing employment in construction operations for large numbers of skilled and unskilled workmen.

One of the most modern plants is that of the Buffalo Springs Distilling Co., in Scott County, Ky., constructed of native limestone on the site of the original plant established in 1868.

Previously distilleries so built and relying on spring waters carrying the limestone and phosphate qualities common in

45° F. refrigerated water. The back-set is cooled at the rate of about 65 g.p.m. and the mash at 100 g.p.m., both through a range of from 20 to 25°. Cooling of mash and back-set are done intermittently using the same coolers.

The refrigerated water is taken from the storage tank by a plunger pump,



Main Buildings of Buffalo Springs Distilling Co., Stamping Ground, Ky.

the Kentucky Blue Grass region were forced to close during the summer months because of the lack of temperature control in their cooling water. Now, however, many of the distilleries with cooling systems overcome this handicap and operate the year-round.

At the Buffalo Springs plant a Frick cooling system has been installed. Here the back-set and mash are mixed in certain proportions and placed in wood vats, where the fermentation takes place. Regulating the temperature of the mixture in these vats and controlling it throughout the fermenting period constitutes an accurately kept and an important step in the process of manufacture.

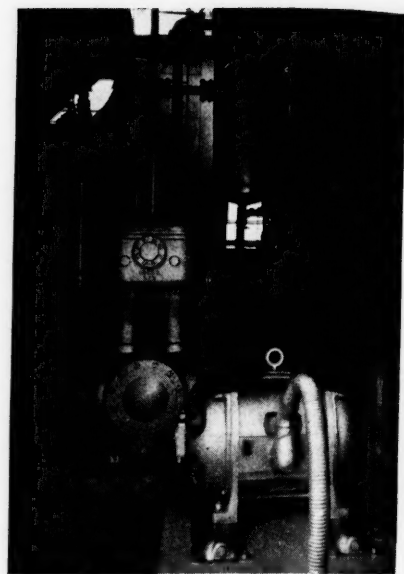
Before the back-set and mash enter the fermenting vats, they are cooled by passing through double pipe coolers arranged in sections. The first section removes the initial heat. The final cooling is accomplished through a 500-foot section through which is circulated approximately 80 gallons per minute of 40 to

passed through the yeast tubs, where the water temperature is raised two degrees and from the yeast tubs through the double pipe coolers, then back over the Frick zig-zag water cooler to the storage tank. Provision is made for circulating a portion of the cold water through a cooler for whiskies, lowering its temperature from 65 to 55°.

Briefly, the water cooling equipment consists of an 8 by 8-inch Frick ammonia machine, driven at 360 r.p.m. by a 75 h.p. motor and using a V-belt drive; two 16-inch MS condensers, receiver, oil trap, an instant cooler and interconnections. The condensers and zig-zag cooler are located above the 15,000-gallon cold water storage tank, the cooler being placed within a corked wall insulated room to the left of the condensers. The condenser and ice water pumps are on the ground floor of the still house.

The fermenting room is partly below the ground level and is protected from the outside temperature on all sides by thick stone walls. The roof is insulated and equipped with a number of adjustable skylights, as well as being provided with spray nozzles for supplying water at approximately 70° over the entire surface, including the skylights.

An exhaust fan, placed at one end of



Compressor With Condensers and Insulated Room for Zig-Zag Coolers Above the Water Storage Tank.

the fermenting room, changes the air every 8 minutes. Fresh air enters through the sprays over the openings in the skylights. This method of air-circulation is designed to give a washed, cool, clean, fresh air supply, making a cooler and "sweeter" fermenting room.

The importance of cold water in a distillery is essential for a good yield from the grain and its use controls fermentation and preserves the aroma and flavor of the whiskey.

### Rome, Ga., Plants Ship To Many Foreign Points

Rome, Ga.—Products of several local manufacturers are going into worldwide markets.

Recently 3,000 tubular wheelbarrows, comprising 7 carloads, were delivered within 3 weeks after receipt of the order by the Rome branch of The Fairbanks Co., manufacturers of handtrucks and wheelbarrows, S. L. Hancock, superintendent, announces. The plant is regularly making shipments to Mexico, South America, and European points.

The Rome Machinery & Foundry Co. is supplying hosiery-dyeing machines to various South American mills.

The King Plow Co., which recently developed heavy plows for use in levee building on the Mississippi River, reports a steady increase in its farm business.

The Davis Foundry & Machine Works, manufacturers of mining equipment and small water turbines, have recently made shipments to points as distant as South Africa.

### Metal Trades Meeting

The thirty-eighth annual convention of the National Metal Trades Association is to be held at the Waldorf-Astoria Hotel, New York City, April 22 and 23. The subjects to be discussed will deal primarily with industrial relations problems.

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of ordinary cement floors

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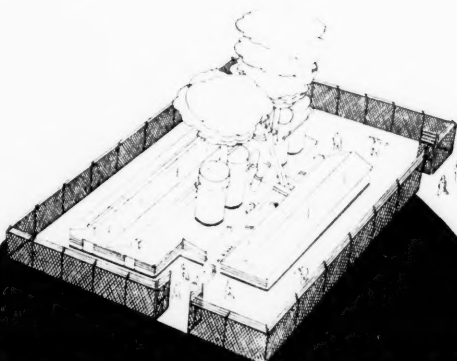
Before you buy floors of any kind, investigate "Ven-ite"—the better, denser, stronger cement flooring.

Ven-ite Floors—designed to meet specific conditions—will withstand the heaviest industrial trucking. They are waterproof, dustless, highly resistant to most acids, unaffected by oil, grease, atmospheric conditions.

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Kanawha City Development, Charleston, W. Va. Architects, Warne, Tucker & Silling, Charleston. Walls painted with Cabot's DOUBLE-WHITE COLLOPACKS, shutters with Cabot's Gloss Collopacks; roof stained with Cabot's Creosote Shingle Stains.

**Easy To Sell**

The sparkling crisp colors of Cabot's Collopacks (the modern paints) and Cabot's Stains make the houses in any development easier to sell. Their long life and economical upkeep invariably make friends for the builder. For further information, sign and mail coupon below.

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Name \_\_\_\_\_

Address \_\_\_\_\_ MR-4-38



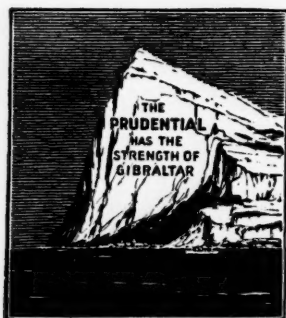
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SICKNESS LAY-OFFS  
and disability after accidents  
leave employees without funds

## GROUP DISABILITY INSURANCE

is the up-to-date means of  
meeting this situation



FULL DETAILS  
*to employers on request*

THE PRUDENTIAL  
INSURANCE COMPANY OF AMERICA

EDWARD D. DUFFIELD, President  
HOME OFFICE, NEWARK, N. J.

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## FINANCIAL NEWS

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### Taxation

As discussed elsewhere in the MANUFACTURERS RECORD, the question of taxation upon business surpluses looms large among matters of vital bearing upon business at the present time. The country would have been in a worse way during the depression if it had not been for the surpluses accumulated by many enterprises which enabled them to keep their plants running and a large proportion of their employees at work, although operating at a loss.

If the proposition now being discussed before the Committee of Congress is adopted, even with a graduated scale of taxes applied to undistributed earnings, it is difficult to see how such a measure can fail in affecting adversely and seriously, small industries in particular. Comparatively few have their surpluses in available funds. They are represented by capital assets of plant and machinery, which are necessary investments for the continued life of the business. The measure proposed, therefore, would seem to handicap progress and discourage expansion.

The government continues to spend the money, and now it is business which is to be called upon to pay a large part of the bill.

### The Townsend Plan

The Townsend Plan, which Congress is investigating, was not holding its place in the days' news until the inquiry started. Interest lagged, but the press is advertising the plan again with large headlines.

This scheme for "the more abundant life" doubtless will soon be on its way to the state of things forgotten, as has happened to a large number of other weird ideas that in recent years briefly claimed public interest. The list is a long one. Depression times always act as a spur to the imagination of some who are prolific in ideas that are bound to fail in practical application. The last six years has been a decidedly open season for uplifters dependent upon boot straps as a means of elevation.

### Bank Mergers

Federal Deposit Insurance, when first adopted, was thought by some to be likely to promote the organization of an increased number of small banks. This has not come about and the report of the Federal Deposit Insurance Corporation calls attention to the mergers and consolidations which have tended to decrease the number of banking units. Bankers have not found it easy to do a profitable business while demand for loans dropped to a low point and deposits were piling up. The question of expense of operating under such conditions, has had a decided effect in bringing about consolidations. With the revival of normal business, it is probable there will be an increase in the number of banks.

### Refunding Continues

The *Journal of Commerce* reports for the first quarter of this year while corporation flotations amounted to \$783,000,000, the largest part of this was for refunding purposes. New capital represented in the issues floated amounted to only about \$90,000,000. The point is made that the small volume of new capital now being raised by corporations is probably less than the amounts being retired by sinking funds.

*(Continued on Page 56)*

## **ON OUR SYSTEM**

COSMETICS, AND NAILS

ICE, AND VITREOUS ENAMEL

HAMS, AND LIME

CONDENSED MILK, AND SHIRTS

BREAD, AND PAPER BOXES

POTATO CHIPS AND WIRE

*Different products, different processes*

## **BUT, THE ONE FUEL—NATURAL GAS**

*Whatever your product, you can make it better with gas*

CONSULT YOUR LOCAL GAS COMPANY

*or write us*

**SOUTHERN NATURAL GAS COMPANY**

Watts Building

Birmingham, Ala.

**290 MUNICIPAL PLANTS CHARGED FOR ELECTRICITY .... \$3.66**

**290 PRIVATE PLANTS CHARGED FOR ELECTRICITY .... \$3.31**

**Y**ou may think that you will get lower electric rates if your community goes further into debt and builds its own electric plant. It is *not certain* that you will, however.

In fact, Dr. Warren M. Persons, famed economist, found in 1934 that the average bill charged by 290 municipal electric plants for 60 kilowatt-hours of energy was *higher* than the bill of 290 comparable private plants. The municipal plants charged \$3.66; the private plants actually charged \$3.80, but 49 cents of this was taxes, so the charge

for service was really only \$3.31. Municipal plants are usually exempt from taxes.

The rate survey of the Federal Power Commission found almost a year later that the actual average charge of municipal plants for domestic use of 40 kwh. or more a month was higher than the average charge of private companies for equal use, even without allowing for taxes paid by these companies but not paid by municipal plants.

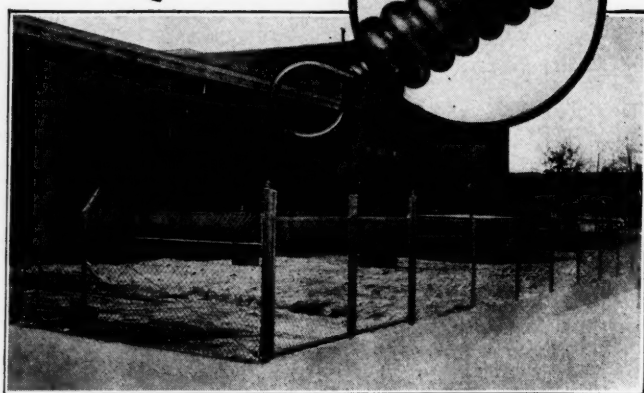
There is no magic about a municipal electric plant.

**ASSOCIATED GAS & ELECTRIC SYSTEM**



# THESE FENCES STAND UP YEARS LONGER BECAUSE THEY CAN

**STAND  
THE WRAP**



*No weak spots for corrosion to attack—the Bethanized wire can be wrapped around its own diameter without breaking or flaking its corrosion-defying zinc coat.*

**H**ERE are the quick facts. Bethanized wire has a coating of chemically pure zinc—free from any vulnerable iron content. The coating is smooth and uniform—not hard and brittle. Twist the wire, bend it double, wrap it around itself—you just *can't* break the zinc coating and expose the steel core.

Think what that means. An Anchor Fence of Bethanized wire is a fence with no flaws in its pure zinc armor—no cracks or crevices through which corrosion can creep in. Because Bethanized wire can “stand the wrap,” these Anchor Fences stand up for many extra years of service—even in industrial atmospheres that are heavy with soot, salt, sulphur and other corroding agents. And now there's no “premium”—no extra cost—for Bethanized wire.

Anchor Fence of Bethanized wire—in types to suit every industrial requirement—are immediately available to you through sales and erecting offices located in every important industrial center in the South. Learn *why* the new Anchor Fences of BETHANIZED wire will outlast by many years any other chain link fence you can buy. Mail the coupon—and bring yourself up to date on chain link fence.

## ANCHOR Fences

OF **BETHANIZED WIRE**

**TODAY PLEASE**

**ANCHOR POST FENCE COMPANY**

6622 Eastern Avenue, Baltimore, Maryland

I will appreciate a copy of your free specification manual giving full details concerning ANCHOR FENCES OF BETHANIZED WIRE for Industrial Property.

NAME .....

ADDRESS .....

## Financial News

(Continued from page 54)

### Benefit Payments to Higher-up Farmers

Up to the present time the information requested of the Agricultural Department by Senator Vandenberg for the names of recipients of \$10,000 or more under the Agricultural Adjustment Act, has not been supplied. No adequate reason has been given for not furnishing the figures, especially as it has been the Administration's policy to disclose corporate figures of every description, even those of an intimate and private nature.

The “farm racket” has been previously discussed in these columns, but it would be an interesting addition to knowledge on the subject to have information as to who are beneficiaries in the higher brackets. The Senator cited an instance of one man who had received payments of over \$200,000 for not raising hogs. In some quarters it had been supposed that large sugar operators in the island territories of the United States had received considerable sums for curtailing production, but the Senator's inquiry implies that operators in other branches of the farm industry had no reason to sniff at the amounts they received.

### Plans for Government Cotton

The cotton market, as this edition of the MANUFACTURERS RECORD goes to press, did not respond favorably to the plans proposed at Washington for the disposal of 4,500,000 bales of cotton on which there has been loaned twelve cents a pound. The tentative plan suggested is for owners to take it back at a price below the current market level, enabling them to sell it at a small profit. The Commodity Credit Corporation would be asked to assume the carrying charges of approximately 1½ cents, and in addition pay the farmer enough to give him a profit. The market interpretation was that the release of a large quantity of cotton will provide more spot cotton and more future contracts.

### Street Railway Traffic Improves

Traffic figures for the first two months of 1936 for street railways, motor bus and rapid transit lines, show increases over the same period of 1935. The increase for January was nearly 5 per cent and for February was more than 10 per cent.

The need for new equipment, rebuilding of a considerable portion of road beds and laying new track on the part of street railway lines is expected to provide more activity to producing plants when it gets under way.

### Increased Loadings Predicted

Shippers' Regional Advisory Boards predict an increase of 9.5 per cent in freight car loadings for the second quarter this year over the same period of a year ago. The principal gain is expected in the mid-West, while the smallest will be in the Atlantic states. In the Southeast it is anticipated the demand for freight cars will be 9.9 per cent above the second quarter of last year. Twenty-nine commodities form the basis of the estimate. Twenty-six of these will move in larger volume, while three will decrease, the survey shows.

### The Important Question

There is no thought that obtrudes more persistently at present than the question of when the national budget will be balanced. Budget balancing is essential for the maintenance of government on a sound basis, and business waits for the knowledge that this is to be undertaken not alone with tax plans that place an embargo upon industry, but with the stoppage of extravagant government outlays.



## AN APPEAL TO "OPEN MINDED" EXECUTIVES

Open Minded Executives readily recognize the value of George S. May management engineering service. This service opens new avenues for profits through an efficient control of all factors which influence profits. It benefits every department, from front office to shipping room.

Write our nearest branch  
for full details!

### GEORGE S. MAY COMPANY

CHICAGO 2600 North Shore Avenue  
NEW YORK 122 East 42nd Street  
HUGO, OKLA. Post Office Box 43  
SEATTLE 747 Dexter Horton Bldg.

Canada: George S. May Ltd., 18 Toronto Street, Toronto

## An Aid To Commerce

A proper banking function is to facilitate in every reasonable way the movements of commerce.

As we view it, the problem of recovery is still mainly up to industry and the unfilled demand of America presents an opportunity to producers.

Our facilities and cooperation are at the service of our customers.

We invite correspondence.

### Baltimore Commercial Bank

GWYNN CROWTHER, President

Baltimore, Maryland

Member Federal Reserve System

Member Federal Deposit Insurance Corporation

## STRUCTURES THAT ENDURE



Salt treated sub-flooring laid on Creosoted stringers and nailing strips, each treated by our Pressure Process.

Statistics show that Wood, when used Untreated, is subject to deterioration through Dry Rot and Insect attack, resulting in costly Replacements and Repairs.

Eliminate the need for these expensive Replacements and Repairs by the use of Structural Timbers preservatively treated by our Pressure Processes with Standard, approved chemicals. Treated Wood has many times the life of Untreated Timbers and will give a lifetime of satisfaction with low maintenance costs.

Our Pressure Treating Plants are conveniently located to promptly serve you at advantageous freight rates.

Detailed Information, Prices and, if necessary, the services of one of our Engineers may be had without cost to you, by writing our territory Sales Office or communicating direct with

## THE WOOD PRESERVING CORPORATION

Koppers Building

Pittsburgh, Pa.

AYER & LORD DIVISION

CENTURY DIVISION

Affiliate

NATIONAL LUMBER & CREOSOTING CO.

### SALES OFFICES

Baltimore, Md. . . Boston, Mass. . . Charleston, S. C. . . Chicago, Ill.  
Columbia Park, O. . . Denver, Colorado . . . Houston, Texas . . . Kansas  
City, Mo. . . Marietta, O. . . Memphis, Tenn. . . Montgomery, Ala.  
New York, N. Y. . . Newport, Del. . . Philadelphia, Pa. . . Pittsburgh, Pa.  
Reed City, Mich. . . St. Louis, Mo. . . Superior, Wis. . . Texarkana, Ark.-Tex.

AFTER ALL THE  
FIGURES WERE IN

*We Selected*  
THE MOST  
MODERN FENCE

★  
CONTINENTAL Chain-Link FENCE



CONTINENTAL  
HAS  
14 MODERN  
AND  
DISTINCTIVE  
*Features*

"We obtained figures on all kinds of fence—found Continental Chain-Link cost considerably less than we had supposed."

Heat-treated wire for high tensile strength and elasticity to absorb shocks and keep its shape—copper-bearing (0.20 per cent minimum) special-analysis steel for rust resistance—heavy hot-dipped zinc coating, and many other features make Continental Chain-Link Fence maintain its attractive appearance and give superior service through extra years of fence life. Learn how little it will cost to have this modern protection for persons and property.

MAIL THIS COUPON...TODAY

★ TR. MRK. REG. U. S. PAT. OFF.

CONTINENTAL STEEL CORP., Kokomo, Indiana:

Tell us, without obligation, about the modern features that put consistent value into your Chain-Link fence.

Name.....

Address.....

AND  
SO IT GOES

HOW FAST IS A FISH?—Haven't you sometime sat with your feet dangling over the old trout-brook, wondering how fast that sleek fellow down there could leg-it if he really tried?

Personally, we never gave the matter a moment's thought before, but that scientists are busy with this and many another pertinency, is attested by the following data on fish speeds just received:

The tarpon is undersea speed-king, having a capacity for cyclonic speeds of 80 miles an hour when following a well-baited hook, or other inducement. The mackerel is next with a fin-flipping velocity of from 60 to 70 miles per hour.

The dreadnaught-like whale only achieves a rate of 30 miles per hour, but it is estimated he uses 500 horsepower to maintain this clip—which isn't bad considering his avoiddupois.

LUMINAIRE—City dwellers who have had recourse to sleeping masks and other devices to eliminate the objectionable glare from street lamps near their bed-room windows, will rejoice and give thanks to General Electric Company engineers for their newly-developed street luminaires.

Light heretofore wasted by conventional units is thrown on the street where it belongs, by the new luminaires. To accomplish this, a cleverly designed reflector, which forms the upper half of the unit, extends below the incandescent lamp, concealing the light source.

Bugs, however, will not join the rejoicing. Where once upon a time a bug might not only see the light, but fly right in and lose itself in the yellow lusciousness, the new luminaire has a globe which is spun on permanently at the factory, joints through which dust and insects might enter being eliminated.

DEUTERIUM—When research scientists, working on a theory are confronted with some altogether new element or substance, they often find they have hit upon a discovery of possible utilitarian merit.

So in the case of deuterium, or heavy hydrogen. Save for its price of \$13,000 a pound, deuterium resembles hydrogen. It seemed destined to remain a laboratory curiosity until it was found possible to produce jets of deuterium gas of such high velocity that the energy from a single pound of the gas equalled that obtained from burning 2,500 tons of coal.

Common salt, when it has been subjected to the jets, develops a radio-activity only fifty per cent less intense than pure radium. Important medical applications of the element may result.

TOURISM—From the land of the Blackshirts comes our newly-coined word, "tourism," via the Italian word "turismo," to fill a need for expression of a new industry: the tourist industry.

Reports from Florida, North Carolina, Texas,—in fact, the whole country—indicate reactions to the stimuli of myriad traveling Americans. The highways are alive with cars filled with sightseers, curious to "see America first"

States priding themselves on being up-to-the-minute will do well to look about themselves and their natural attractions, as a means of corralling a fragment of this great new "tourism" industry.

Apparently, people who can afford it are making up for traveling time lost during the depression, when it was neither possible nor judicious to be seen far from home.

RUBBER GLASS—To show doubting Toms the elasticity of a new kind of glass which stretches like rubber, a burly Fordham University football squadster sprinted through an invisible left tackle and bucked the line of a large sheet of the new glass. He was hurled back six inches. The glass returned to its normal state.

Vinyl, a new plastic development, is the resin which binds two layers of ordinary glass into the new safety glass. All you have to do is smash the glass surfaces thoroughly, then roll it up like a sweater. That is, if you have a yen to roll glass up like a sweater.

MANUFACTURERS RECORD FOR

**AUTOSTATISTICS**—Not all of us in America has heard of the National Census Bureau, a statistical organization supported by the automobile manufacturers, but the chances are if you drive a car, they know about you.

They can tell you such things as 39 per cent of prospective car buyers get new cars and 61 per cent used cars. Or, if you purchased an automobile when new, the chances that you will buy another new car within five years of the purchase date are 95 out of 100.

If you are driving a used car the chances are one in ten that you will buy a new car, and 75 out of 100 that it will be another used car. Their ability to predict would seem almost psychic to we ordinary mortals.

**HORSE AND BUGGY DAYS**—"Nobody lists buggies here anymore," commented tax department official S. C. Hunter, of Asheville, N. C., as he dropped from the 1936 tax list "buggies," and added "airplanes."

Horse and buggy days, so far as Buncombe county is concerned, seem to be officially over.

Out in Lawrenceburg, Indiana, buggy manufacturing hits a new high, with 900 buggies, valued at \$75,000 sold last year.

It is a contrary world.

**DOWN UNDER IN A BUCKET**—When you're building a bridge as large as the San Francisco-Oakland Bay Bridge, you can count on running into some abysmal problems.

Imagine trying to dig a hole in the bottom of the bay two hundred feet below, for instance. It takes more than a pick, shovel and determination to do that. Even carbon steel dredging buckets were not strong enough.

So they used a high-strength steel-alloy called Cromansil steel for each of the four-yard clamshell buckets used under extreme pressures. Mud, clay and various undersea life were then dredged out of the large caissons which slowly settled to bed rock.

**THE LARGE AND SMALL OF IT**—Almost coincident with the casting of the Cunard White-Star, Queen Mary's 35-ton bronze propellers, comes word of development of the world's smallest, micro-wave radio transmitter, a device three inches square, capable of transmitting radio waves a distance of four miles at a power of two-tenths of a watt.

The idea is for foot-loose announcers to carry the transmitter in their pockets and be independent of the "old-fashioned" wires, free to circulate wherever duty calls. Micro-waves in the 300,000,000 cycle band permit use of midjet antenna equipment, twenty inches long, and afford a phenomenal degree of penetration through intervening structures.

The whole apparatus weighs five pounds, including the battery, and is about the first thoroughly practical small-scale broadcasting station.

**NEWSPRINT IN THE NEWS**—Grinding out newsprint 300 inches wide at the rate of 200 tons every twenty-four hours is the capacity of the largest and fastest running paper-making machine in the world, built by a British firm in Lancashire. The machine is nearly 500 feet long and weighs 2000 tons.

**LOG HOUSES**—"While concrete, steel, marble, brick and stone will always be used in construction of buildings, it is pleasing to note that hewn log houses are coming back in many sections of the country," said Willis Avery, New Britain, Conn., tourist.

"I have traveled over many states of the South," he said, "and was surprised to find home builders erecting new hewn log houses. Oak, pine, chestnut and other native timbers are being used especially in the country districts."

"The houses look modern and would be good additions for residential districts in any city," he concluded.

**GLASS NOSE**—Its fibres crossing each other in thousands of directions, a new glass air filter acts like a mechanical "nose," forces dust-laden air through an increasingly tortuous path, and by impingement, causes it to drop its charge of dirt.

Such a filter, commercially known as "Dustop," (a punnish combination of "dust" and "stop" as you already guessed), consists of a mass of glass fibres, coated with an odorless, fireproof, non-evaporating and non-corrosive chemical, destined to catch and hold all manner of dust particles. This development will be of importance to internal combustion engines, air compressors and heating and ventilating units generally.

# PAGE FENCE

## New LINE POST MAKES FENCE HISTORY



### "Page knows fencing and metals"

"We recognize PAGE as the fence pioneer. Witness this new fence post. Heretofore, fence posts have been adaptations of existing sections. Now PAGE gives us the new wing channel line Post designed by their engineers especially for fence and fence alone, with many advantages resulting—superior galvanizing, greater strength, a far neater, more serviceable installation."

PAGE knows *fencing and metal*. Since no one metal is suitable for all fence conditions, PAGE alone offers a selection of *quality fence metals*—PAGE-ARMCO Ingot Iron, PAGE "ALCOA" Aluminum, PAGE Allegheny Stainless Steel, PAGE Copper-Bearing Steel, PAGE *genuine* Wrought Iron.

Located throughout the United States are 92 Page Fence Distributors who will gladly consult with you, without obligation, in best solving your fencing problem. They are prepared to recommend impartially the particular metal that will give you the best service and to assume full responsibility for proper installation.

Write to any one of the offices shown below for helpful literature and name of the Page Fence expert nearest you.



### PAGE FENCE ASSOCIATION BRIDGEPORT, CONNECTICUT

New York Pittsburgh Atlanta Chicago San Francisco

### This Label . . . Your Guarantee

The PAGE P-12 label identifies PAGE galvanizing which is guaranteed to withstand a minimum of 12 one-minute dips by the Preece Test. PAGE P-12 galvanizing applies not only to fence fabric but also to posts, top rail and fittings as well—*your guarantee of maximum resistance to rust.*

### AMERICA'S FIRST WIRE FENCE . . . SINCE 1883





## for Textiles

★ ★ ★ ★ ★ ★ ★ ★

**F**rom raw cotton, wool, silk, and the chemicals of synthetic fibres to finished textiles there are many steps—chemical and mechanical—in which Hercules Powder Company materials speed processes, increase quality, decrease costs. Chemical cotton (base of synthetic fibres), grease solvents, dye assistants, and kier and sizing compounds are some of the Hercules products which serve the textile industry and other industries.

### ★ Some Hercules Products —

Cellulose Products . . . Rosin, Rosin Derivatives, Spirits of Turpentine, Pine Oil . . . Chemical Cotton . . . Paper Makers Chemicals . . . General Industrial Chemicals . . . Commercial Explosives, Sporting Powders.

### ★ Some Industries Using Hercules Products —

Textile, Paper, Construction, Plastics, Metallurgical, Disinfectant, Insecticide, Paint, Varnish, Lacquer, Soap, Synthetic Fibres, Mining, Quarrying, Foundry, General Chemicals.

## Send for Booklet

★ ★ ★ ★ ★ ★ ★ ★  
**HERCULES POWDER COMPANY**  
INCORPORATED  
Wilmington, Delaware



Please send booklet describing your products for.....  
Name.....  
Address.....  
Company..... IN-40-M

# INDUSTRIAL NEWS

## Compressor Units for Gas Line

Contract has been awarded to The Cooper-Bessemer Corporation, Mt. Vernon, Ohio, by the Panhandle Eastern Pipeline Company, Kansas City, Mo., for 14 twin-tandem gas-engine-driven compressor units—twelve 1300-horsepower units and two 1000-horsepower units.

## Hobart Arc Welded Steel House

In an effort to make possible a durable and satisfactory low cost home, and in line with efforts of the Federal Government and private organizations to stimulate home building activity, Hobart Brothers, of Troy, Ohio, have developed the design and construction of an arc welded steel house.

## \$3,500,000 Seamless Pipe Order

For supplying natural gas to the City of Detroit, a \$3,500,000 seamless pipe line order has been placed with the National Tube Company, Pittsburgh, Pa. The line will be 230 miles long, extending from Zionsville, Ind., to Detroit, and will require 44,000 tons of 22-inch seamless pipe.

## Pitch For Steep Roofs

Having proven its exceptional qualities, throughout a period of years, for built-up flat roof construction, coal-tar pitch now comes to the attention of users as a steep roof material. The Barrett Company, New York City, announces its "Steep Roof Pitch," which is expected to become an important factor in future specifications for steep roof construction. This new product makes possible the use of fire-safe and highly protective gravel or slag surfaces which have heretofore been used only on flat or nearly flat surfaces. It will withstand the coldest of winter weather, it is declared, without cracking, checking or loss of bond, and is particularly resistant to slide at high temperatures.

## Gulf States Steel Holds Favorable Position

In a recently published article by Emmons Bryant, Jr., regarding the strategic position of the Gulf States Steel Company, Birmingham, Ala., in the South, attention is directed to the fact that this is the only integrated steel producer in the South and that the natural market for the company is the surrounding agricultural territory. The company originally produced nothing but wire and allied products such as fencing, nails, staples and bale ties, but constructed facilities for the production of other products such as plates, bars and sheets. While the earning power of the company has never been tested by favorable business conditions since its expansion, it has maintained an unusual record during the depression. Low point in its earnings was reached in 1931. Despite lower sales in 1932, the company was able by curtailing operating expenses to reduce its loss. A large fourth quarter in 1933 resulted in its first profit since 1929, while a deficit was shown in 1934. Last year brought a return of profitable operations, and it is expected that future operations will continue profitable. While the company has no facilities for tin plate production at this time, it is understood that plans for building such facilities are being considered. With the addition of these facilities and maintenance of farm income at its present level or slightly better, the company expects to show higher sales in 1936 than in 1935.

## Advertising Agency Moves

To provide more space with better facilities to meet requirements of their business, Van Auker - Ragland, Inc., advertising agency, with offices in the Daily News Building, Chicago, Ill., will move into larger quarters May 1 in the Twenty North Wacker Building.

## Twelfth National Power Show

The twelfth National Exposition of Power and Mechanical Engineering will be held at Grand Central Palace, New York, November 30 to December 5, 1936, under the management of International Exposition Co.

## Large Machine-Polished Stainless Steel Plate

What is said to be the largest stainless steel plate (in total square inches of area) ever rolled and polished, has been successfully machine-polished at the plant of the American Rolling Mill Company at Middletown, Ohio. The plate is 70 inches wide and 208 inches long.

## Kauffmann Again Heads Link-Belt

At the annual meeting of shareholders, Alfred Kauffmann was elected president of Link-Belt Company, succeeding George P. Torrence. Mr. Kauffmann started with the company 35 years as a draftsman. He was president of the company from 1924 to 1932.

## Concrete Floors Design

The Portland Cement Association, Chicago, has recently published a booklet on "Simplified Design of Concrete Floor Systems" to provide a quick means of determining the relative economy of various systems.

## Telephones In Use Gain

Bell System telephones in service increased 466,500 in 1935. This compared with an increase in 1934 of 298,000.

## Factory-Built Homes

The development of a factory-built, engineered home of six rooms and bath to sell for less than \$4,000 has been announced by Harnischfeger Corporation, Milwaukee, Wis.

## Pittsburgh Plate Glass Report

Net income of the Pittsburgh Plate Glass Company for 1935 amounted to \$11,398,739. A total of \$6,426,070 was paid in dividends to stockholders. The company has a total of 657,000 stockholders.

## Sales Engineer for Power Plant Equipment

George P. Schumacker, for the past 15 years with The Worthington Pump & Machinery Corporation, has established an office at 1120 Chester Avenue, Cleveland, Ohio, and will represent The Cooling Tower Company, Inc., The Pennsylvania Pump & Compressor Co., Quincy Compressor Company, National Steam Pump Co., The States Company, The V. D. Anderson Company, The Williams Valve Company, The Sea-Ro Packing Company, and The Mabbs Hydraulic Packing Company.

## Mercury-Incandescent Floodlight

Marking a departure in floodlighting practice, General Electric Company engineers have combined mercury and incandescent lamps and installed five floodlights in a gasoline station at Schenectady, N. Y.

By the Insurance Department  
CONDENSED STATEMENT  
SHOWING THE CONDITION OF THE  
**Fidelity & Guaranty Fire Corp.**  
**Baltimore, Md.**

DECEMBER 31, 1935

Total income during the year	\$3,602,906.36
Total disbursements during the year	3,068,383.68
Total admitted assets	5,853,996.83
Total liabilities except capital	3,218,537.39
Capital actually paid up in cash \$1,000,000.00	
Surplus over all liabilities	1,635,459.44
Surplus as to policy holders	2,635,459.44
Total Liabilities	\$5,853,996.83
Net premiums in United States December 31, 1935	\$5,153,009.58
Risks written in Maryland during 1935	140,888,804.00
Premiums on Maryland business in 1935	189,135.63
Losses paid in Maryland in 1935	58,717.61
Losses incurred in Maryland in 1935	74,279.61

STATE OF MARYLAND  
Office of the  
STATE INSURANCE DEPARTMENT  
Baltimore, Md., March 2, 1936  
I hereby Certify, That the above is a true abstract, taken from the Annual Statement of the FIDELITY AND GUARANTY FIRE CORPORATION, BALTIMORE, MD., for the year ending December 31, 1935, now on file in this Department.

W. S. HANNA,  
Insurance Commissioner.

**4 KLOEPEL Hotels in FLORIDA**

**JACKSONVILLE**

**The GEORGE WASHINGTON**

300 Rooms with Bath and Shower  
The Wonder Hotel of the South. Radio and every known facility for first class operation.  
GARAGE in direct connection with lobby.  
RATES.....from \$3.00



**The MAYFLOWER**

300 Rooms with Bath and Shower  
Famed for its hospitality and favored alike by winter visitors and Commercial Travelers. Radio. GARAGE adjoining.  
RATES.....from \$2.50

**The FLAGLER**

125 Rooms...Baths  
You'll be pleased with its convenience, comfort and service. Moderate prices prevail.  
GARAGE directly connected.  
RATES.....from \$1.50



**WEST PALM BEACH**



**The GEORGE WASHINGTON**

200 Rooms with Baths and Showers  
Open all the year. Radio and every modern convenience and service for summer and winter comfort.  
RATES from \$3.00 GARAGE service.  
★ Reasonable Rates Posted in Every Room

**JOSEPH KLOEPEL MANAGEMENT**

## MODERN INSURANCE

Present day needs for life insurance call for modern plans of insurance. Atlantic Life, a company serving the South for over 36 years, offers a complete line of attractive contracts—designed to suit all purposes and offered at low guaranteed cost.

### ATLANTIC LIFE Insurance Company

RICHMOND, VIRGINIA  
ANGUS O. SWINK, President

*Honestly, It's the Best Policy*

### THE DEVELOPMENT OF THE SOUTH MEANS THE ENRICHMENT OF THE NATION

## Florida Beach Property For Sale

*Ocean frontage  
on Anastasia Island  
near St. Augustine*

*Town property  
at Flagler Beach  
Flagler County*

*Investigate the possibilities of Beach  
property for development  
in Florida*

**Model Land Company**  
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### AMERICAN BRAKE SHOE PRODUCTS—

Booklet—illustrated, devoted to products of The American Brake Shoe and Foundry Company and its subsidiaries, which include under general classifications, brake shoes, miscellaneous iron castings, man-hole castings, grate bars, heat resisting castings, marine castings, special alloy castings, abrasion resisting castings, carbide castings, Hi-Test and semi-steel castings, white and chilled iron castings.  
**The American Brake Shoe and Foundry Company, New York City.**

### AUTOMATIC PRODUCTION CONTROL—

Booklet—detailing with text and illustrating the need for automatic production control and how it is accomplished, and specifically describing and illustrating various types of Reeves Automatic Control—hydraulic, mechanical, electric and differential.  
**Reeves Pulley Co., Columbus, Ind.**

### EX-CELL-O PRODUCTS—

Literature—booklet on EX-CELL-O Precision Belt Machines for boring, facing and turning; booklet No. 218 on EX-CELL-O Precision Machines; booklet on EX-CELL-O Precision Products; broadsides on EX-CELL-O Carbide Tool Grinders—Nos. 44, 46 and 48; folders on EX-CELL-O Precision Thread Grinder and EX-CELL-O Hydraulic Power Units.  
**EX-CELL-O Aircraft & Tool Corp., Detroit, Mich.**

### FOLDING PAPERBOARD BOXES—

Booklet—outlining the development of the manufacture of folding paperboard boxes for packaging.  
**Robert Gair Co., Inc., New York City**

### IMPROVED LOCKER—

Folder—devoted to the new Lyon Locker, unusually quiet in operation with improved hinge, handle, and latching device.  
**Lyon Metal Products, Inc., Aurora, Ill.**

### AIR-CONDITIONING—

Bulletin No. 506-A, illustrating and describing four kinds of Frick refrigeration for air conditioning and showing important buildings where Frick units have been used.

### AIR CONDITIONING IN THE SOUTH—

16-page booklet prepared by Paul J. Vincent, of Paul J. Vincent Co., engineers, Baltimore, Md., detailing some installations of Frick air conditioning by the Vincent company in prominent structures in Baltimore and the South.  
**Frick Co., Waynesboro, Pa.**

### MOTORPUMP IN AIR CONDITIONING—

Bulletin No. 2200, 6 pages, describing the Cameron Motorpump as used in air conditioning service, and illustrating Motorpumps in connection with air conditioning systems of several types.  
**Ingersoll-Rand Co., New York City**

### ALBANY, GEORGIA—

Folder—describing some of the many advantages of the City of Albany, Georgia, including its aggressiveness, attractiveness, commercial and industrial advantages, development of its agriculture, its accessibility, and its desirability as a place of residence and recreation. The publication is attractively illustrated.  
**Chamber of Commerce, Walter R. Brown, Secretary, Albany, Ga.**

### ARCHITECTURAL METAL WORK—

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### PINE FOR RESIDENCES—

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**Southern Pine Association, New Orleans, La.**

### ROAD MACHINERY—

Booklet—"Construction", devoted to entire line of Allis-Chalmers road machinery.

### TRACTOR—

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### ROTARY COMPRESSOR—

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**Allis-Chalmers Manufacturing Co., Milwaukee, Wis.**

### CONCRETE CONSTRUCTION—

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**Union Drawn Steel Co., Massillon, Ohio**

### CAST IRON PIPE—

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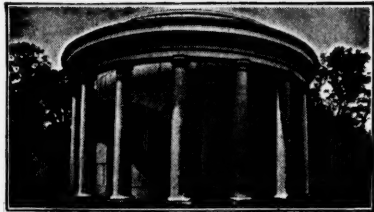


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We won't attempt to tell you the whole story of ARMCO H. T. 50 here, as interesting as it is. We'd rather reveal its possibilities for your use in the illustrated folder prepared especially for sheet-and-plate fabricators. Your request on your letterhead, or even a penny postal card, will bring you a copy immediately. Write for it now. The American Rolling Mill Co., Executive Offices, 703 Curtis St., Middletown, Ohio. Branch Offices in All Principal Cities.



## All-Welded Tanker Built By Ingalls

**T**HE largest all-welded steel tanker in the world, the 258-foot motorship "Transoil," owned by the American Tankers Corporation, recently came off the ways of the Ingalls Iron Works, of Birmingham, Ala., at their Chickasaw (Ala.), yard. She is a twin-screw, dual-ruddered craft, powered by a pair of 500 h.p. Diesels made by the Superior Engine Co., Springfield, Ohio.

The tanker is constructed with the Isherwood bracketless system, in conjunction with the conventional system of transverse framing.

The "Transoil" has a length of 258 feet, beam of 43 feet and freeboard of 16 feet 4 inches, dead-rise and deck camber each being 4 inches. More than 25 miles of welding were used in the construction, beads varying in size from  $\frac{1}{4}$ " to  $\frac{1}{2}$ ". The entire ship, including bottom, sides and deck, is free from distortion, evidencing the care exercised in welding operations. Shrinkage due to welding amounted to but one inch in her length, and in the beam an inappreciable amount.

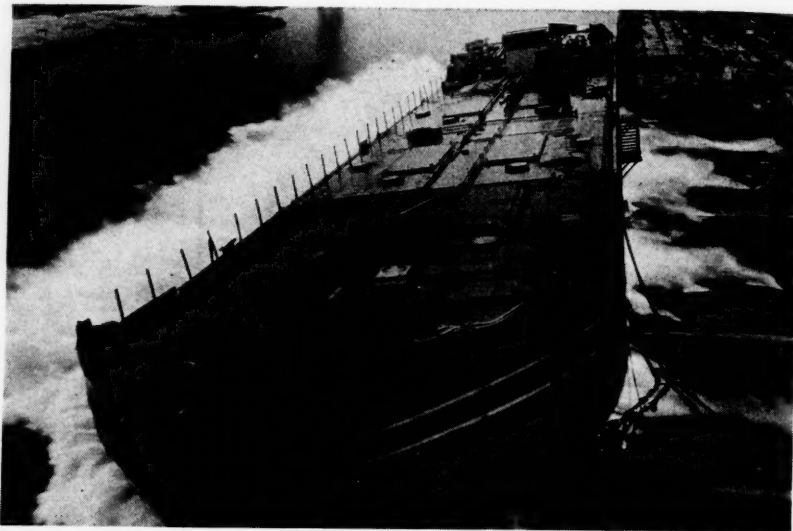
Designed by George B. Drake, of New York City, construction on the tanker was carried out by means of the shielded arc method of welding, in conjunction with the Ingalls all-welded system. The company has in its shops a variety of welding machines, including Lincoln, Hobart, Wilson and General Electric, and during the intensive welding on the tanker, all were employed. Some of these machines are of the dual operator type.

All of the steel used in constructing

the tanker was fabricated at the Ingalls Iron Works Company's plant at Birmingham, and assembled at Chickasaw.

Her maiden voyage will possibly be made into northern waters with a cargo taken on in the South. Classified for coastwise, barge canal and Great Lakes service by the American Bureau of Shipping, she was built in accordance with the U. S. Bureau of Navigation and Steamboat Inspection requirements.

All-Welded Tanker Takes To Water



## Weave Rubber Mats

Brunswick, Ga.—A new industry, established by Sample & Job, is producing a rubber fabric woven mat and runway from discarded automobile tires. The mats, averaging  $\frac{3}{4}$ -inch thick are made in special sizes up to 40 feet square. Special looms and machinery used in their manufacture were designed by M. B. Sample.

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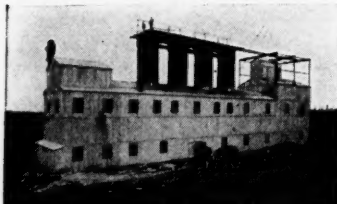
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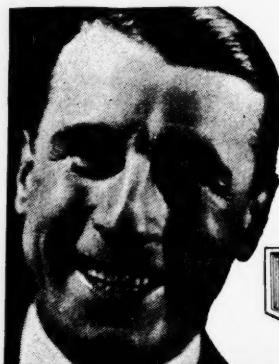
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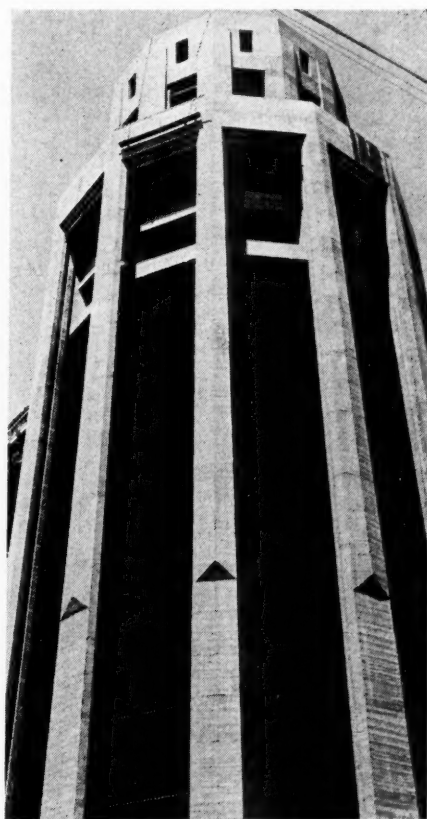


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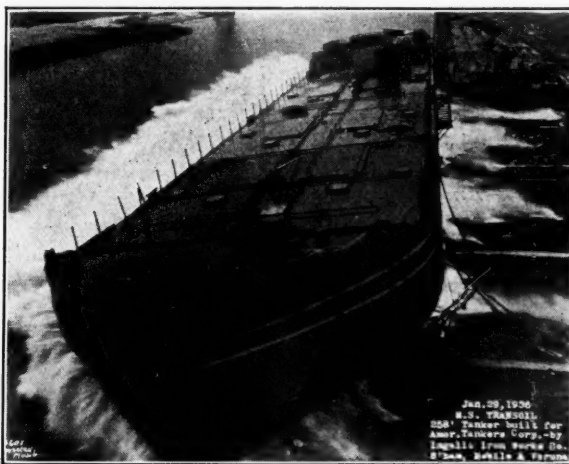
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**Shipyards at Mobile, Ala. and Decatur, Ala.**



## Slash Pine Propagation Experiments

Alabama Power Co. Hopes to Boost Naval  
Stores Industry and Provide Profitable  
Farming

By  
**B. R. Powell**  
Manager, Land Department, Alabama Power  
Company

**E**XPERIMENTS in slash pine propagation and planting are being made by Alabama Power Company with the hope that it can be successfully grown in central Alabama. As we know, the habitat of this member of the pinus family is the coastal plain of the Gulf of Mexico and the South Atlantic, and we assume that it originated still further south along the coast of the Caribbean Sea as it was given the technical name *Pinus Caribaea*. It is the fastest grower and the most prolific yielder of turpentine and rosin of all the pines.

It was slash pine that Dr. Herty used in making white newsprint paper which promises to add greatly to the industrial growth of the South, and several mills are now using it in the manufacture of high grade kraft paper.

Having observed that the pine tree sows its seed in autumn, we thought it wise to follow nature in our planting, so in the fall of 1934, seed beds were established near Jordan Dam on the Coosa river. We extended our planting the following spring. In January, 1935, we obtained 10,000 seedlings from the State nurseries at Livingston, Ala., and set them in two five-acre tracts at points near Wetumpka and Alexander City, respectively. Then in January of the present year, we transplanted from our nursery near Jordan about 100,000 seedlings to an abandoned farm near

Martin Dam on the Tallapoosa river. In October of 1935, we planted 50 pounds of seed which should produce about 100,000 seedlings, and planted about that number last month, thus experimenting with both fall and spring plantings.

If we can prevent destruction of the young trees by fire we can within a few years determine economic merit.

Since the Southern farmer is fast losing his foreign market for cotton, which will compel him to curtail his acreage in order that supply will more nearly balance with demand, it is hoped that in slash pine may be found a crop that will supplement his income. It is not intended as a substitute for cotton or any other annual crop, though much very poor land heretofore planted in cotton might well be used. It is an attempt to obtain revenue from the marginal or waste land.

The quickest financial return from a planting of slash pine would be from

cutting the sapling for paper pulp when it has attained a diameter of from four to six inches, but this writer believes that the greatest return will be from turpentine and rosin when the tree has a diameter of eight to ten inches. France has made herself independent of the rest of the world for naval stores by planting its southern coastal plain in slash pine. Our own supply now comes chiefly from second growth slash, since the original forests have almost vanished. As our supply diminishes, it is natural to expect that the price will rise and that eventually it will pay the farmer a nice return on his investment to plant the trees for this purpose.

The possibility lies in the ratio per acre of planted trees to those on an acre of natural forest, which is about 25 to 1. To explain this further it may be noted that the average number of trees per acre on original forest land is about twenty, while five hundred per acre can be established by planting. So it is apparent that whereas it requires five hundred acres of natural forest land to furnish a crop of turpentine cups (10,000), it would only require twenty acres of planted trees.

We are planting the trees six feet apart (1,225 to the acre) expecting a 70% survival. When they have reached a diameter sufficient for paper pulp we expect to thin them out and sell those cut out for that purpose. After working the remaining trees six years for turpentine, the part above the scar can be sold for paper pulp. Five crops of cups will justify an investment in a still, but in a community where small farms are numerous the farmer with small acreage could sell his dip by the barrel, or a community still could be operated.

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## 99 Textile Mills Located In the South During 1935

Power Company's Survey Shows Carolinas  
Gained Most Enterprises

Textile plants to the number of 25 were established in the South during 1935, while 74 existing plants expanded manufacturing facilities, an industrial survey made by the Duke Power Company, Charlotte, N. C., discloses.

Of the 25 new textile mills, 8 were for the manufacture of hosiery. Of the 74 additions, 19 were at hosiery mills.

All 8 of the new hosiery mills, included in the list compiled by the power company were established in North Carolina, 7 being located in communities served by the company's power lines. Fifteen of the 19 additions to hosiery mills in the South last year were in the two Carolinas, 13 in North Carolina and 2 in South Carolina. Of the 15 in the Carolinas, 14 of them were in territories served by the Duke Power Company.

Of the 17 new textile mills, other than hosiery, established last year, 10 were built in North Carolina. Of the 55 additions to textile enterprises, other than hosiery, 40 were in the Carolinas, 22 in North Carolina and 18 in South Carolina.

## Completing Cold-Roll Strip Mill

(Continued from page 38)

row of pivoted sections at the level of the crane cage, for extra ventilation at this point. All sash are steel of the flush type, having no sills to collect cinders and dirt, thus preventing corrosion at this point. There are in all 27,000 square feet of monitor sash and 24,000 square feet of sidewall sash.

As an added assurance of proper lighting, aluminum paint has been used on all interior surfaces on the cold mill and skin pass buildings.

To obtain the greatest possible degree of temperature control, corrugated rubber filler has been adjusted to the corrugated metal wall sheet at all top and bottom horizontal joints.

The cold mill and skin pass mill buildings will be heated in winter, and in these buildings hand operated shutters, reached by continuous platform, are provided to close the ventilators.

An improved type of monitor ventilator is used which differs from the usual mill design in that the louvres run crossways instead of parallel with the building. It is equipped with a baffle plate midway between the adjacent louvres which deflects the wind, re-

gardless of its direction, into a path parallel to the louvres.

The roof over the motor and assorting rooms, the roll shop and small service station is made of Aerocrete, approximately three and one-half inches thick. This is reinforced concrete chemically treated to form an air-impregnated porous structure. The outer covering is Johns-Manville waterproof, smooth asphalt and asbestos material, standard specification No. 101.

For roofing purposes, a total of 209,000 square feet of Robertson Protective Metal, (metal supplied by the Bethlehem Company, processed by the Robertson Company), was required. For siding, 133,000 square feet were utilized. Roofing of Aerocrete material totaled 16,000 square feet.

To provide an abundant fresh water supply, two new wells were drilled—165 and 235 feet deep respectively—and equipped with motor driven vertical centrifugal deep-well pumps. These pumps each have a capacity of 650 gallons per minute. In addition, there have been provided two 1300-gallon-per-minute pumps for circulating the water after it has been pumped into storage.



### It costs no more --- to use the best

## HEATING KETTLES

Spring Mounted Frames . . . Rubber Tires  
. . . Roller-Bearing Wheels  
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ROAD DRAGS . . . DRAWN PATROL GRADERS  
The AUTOGRADER  
STONE SPREADERS . . . SNOW PLOWS

**CHAMPION**  
with **SKF**

### ROCK CRUSHERS . . . ROLLER BEARINGS

Complete Equipment for  
FEEDING ELEVATING CONVEYING SCREENING  
WASHING LOADING

## GOOD ROADS MACHINERY CORP.

KENNETT SQUARE, PENNA.

## McLANAHAN EQUIPMENT

### CRUSHERS

Single and double roll and jaw crushers, hammer mills, super dry pans, —steel log washers and scrubbers, sand drags, revolving and vibrating screens, elevators, conveyors, dryers, jigs, hoists.




### SCREENS

Complete portable, semi-portable and stationary crushing, screening and washing plants for different capacities of any materials.

**McLanahan & Stone Corporation**  
Established 1835  
Hollidaysburg, Pennsylvania

# G LAMORGAN

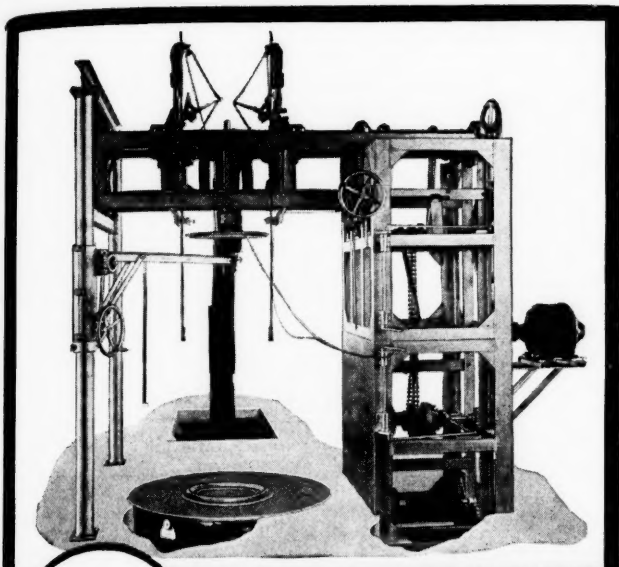
## PIPE & FOUNDRY CO.

LYNCHBURG, VA.

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Manufacturers of  
Cast Iron Pipe and Fittings  
For Water and Gas Service





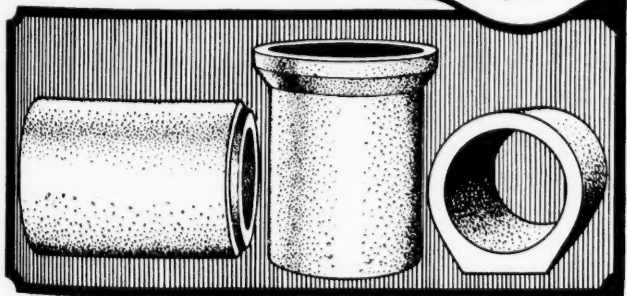
# QUINN QUALITY CONCRETE PIPE

Quinn process concrete pipe surpasses most specifications because of 60% greater compression test and lowest absorption. Quinn forms produce smooth finish and eliminate bleeding at joints. Make better pipe in all sizes, at lower cost, with Quinn equipment for manual or machine production. Write for information, prices on equipment for producing all types of concrete pipe at lower cost.

## QUINN 6ft. Medium Duty PIPE MACHINE

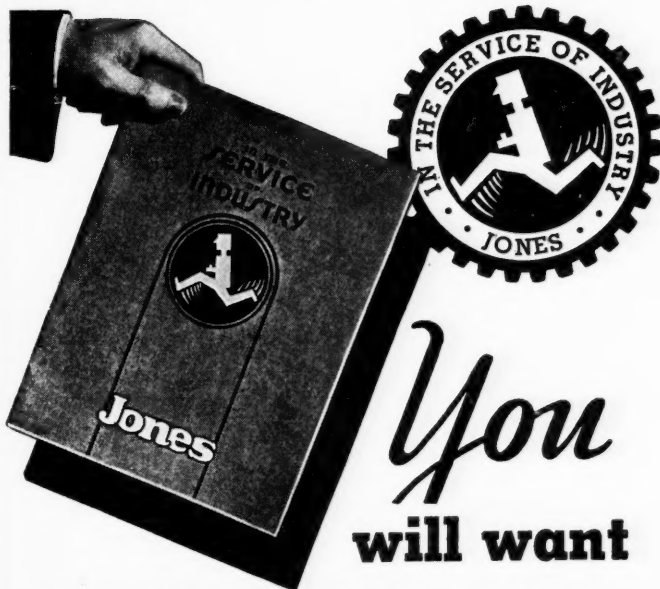
Six foot machine makes pipe 12" to 60" in diameter in 3 ft., 4 ft. and 6 ft. lengths. Machine tamping, 400 lbs. trip hammer action blows at rate of 370 per minute packs concrete in dense mass—produces smooth finish pipe of super strength and lowest absorption. Four-foot machine makes pipe 12" to 60" in diameter in 30", 36" and 48" lengths. Heavy Duty Machine has capacity up to 125 tons a day. Write for details, capacities, costs, etc.

**QUINN WIRE & IRON WORKS**  
1605 Twelfth St., Boone, Iowa



## QUINN STANDARD

*Quinn Concrete Pipe construction is recognized as standard by many municipalities, drainage, sewerage and irrigation districts in asking for bids on pipe. "Quinn Standard" or equivalent means Quinn pipe has no equal.*



*You*  
will want

## this NEW BULLETIN!

OVER ten thousand copies of this interesting new Jones bulletin have already been sent out to organizations in all fields. If you have any possible interest in drive problems such as speed reducers, cut and molded gears, V-belt sheaves, anti-friction pillow blocks, etc., you will also want to see a copy. It will give you a condensed picture of the various types of drives, how they are built, and where and how they are used. The Jones organization will be pleased to send you a copy.

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& MACHINE COMPANY**  
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CUT AND MOLDED TOOTH GEARS—V-BELT SHEAVES  
ANTI-FRICTION PILLOW BLOCKS—PULLEYS  
FRICTION CLUTCHES AND TRANSMISSION APPLIANCES

## Increased Revenues for Gulf, Mobile & Northern

The annual report of President I. B. Tigrett to the stockholders of the Gulf, Mobile & Northern Railroad Co., reflects encouraging progress during 1935. Total operating revenues were \$6,173,210, an increase of \$942,252 over 1934. The net operating income of \$1,100,942 was more than 100 per cent above 1934, the figure for that year being \$512,546.

Borrowings from the Railroad Credit Corporation were reduced by \$82,596, while additional Equipment Trust Certificates to the amount of \$342,000 were issued partly to cover the cost of two streamlined Diesel electric trains.

President Tigrett states in his report that five years ago the company "began the operation of gas-electric trains in passenger service. The operation of such trains was found to be more economical than the operation of steam trains, especially where passenger traffic is light. Purchase of the Diesel-electric trains completed the motorization of the road's passenger service." The public response to the attractiveness and comfort of the new streamlined trains has been definite and encouraging.

Freight revenue increased \$884,811, or 18.59 per cent. One of the items contributing to this was a substantial increase in revenue from cotton transfer by the government from interior warehouses to ports. Attention is also called to the increase in freight revenue on sand and gravel due to more extensive road construction programs in the territory served by the company. Another substantial increase in revenue was from

## Business Administration Students To Study Economic And Trade Practices Of West Indies

FROM the University of Florida at Gainesville, comes word of a projected 6000-mile summer cruise through the islands of the West Indies, that students of business administration may study at first hand the economic conditions and trade practices of Caribbean America.

Sponsored by the College of Business Administration of the University, together with the Institute of Inter-American Affairs, the cruise will get under way from Tampa, Fla., on July 4.

Stops will be made at eight different ports, giving students the opportunity of observing a wide variety of foreign trade practices. Cities to be visited are:

Kingston, Jamaica—(British)  
Pointe A Pitre, Guadeloupe—(French)  
Fort de France, Martinique—(French)  
Bridgetown, Barbados—(British)  
Port of Spain, Trinidad—(British)  
Georgetown, British Guiana  
Paramaribo, Dutch Guiana—(Netherlands)  
Moengo, Dutch Guiana—(Netherlands)

Administration officers include: John James Tigert, president, Rollin Salisbury Atwood, acting director.

freight on paper, paper board, etc., and wood pulp.

Twenty-two and one-half miles of track on the Louisiana division were relaid with 90 pound rails, and 27½ additional miles will be laid on this division during 1936. Unserviceable equipment, having a book value of \$95,100, was retired during the year.

## Change In Financial Plans Of Jones & Laughlin Steel Corp.

A change in its proposed plan of financing and notification from G. M. Laughlin, Jr., that he intends to resign as chairman, was announced by the Jones & Laughlin Steel Corporation, in the following statement.

G. M. Laughlin, Jr., Chairman of the Board of Jones & Laughlin Steel Corporation, announces that the Board of Directors of the Corporation has decided to change its proposed plan of financing by issuing \$30,000,000 of first mortgage bonds and making bank loans extending over a period of five years in the amount of \$5,000,000 instead of the \$40,000,000 first mortgage bonds originally proposed.

In connection with this change in financing, the Board of Directors propose to return to the general working funds of the Corporation cash and U. S. Government securities of a total value of \$4,700,000 that had heretofore been segregated by action of the Board to cover various reserves set up on the books of the Corporation.

Mr. Laughlin also announces that he has notified the Board of Directors of the Corporation of his desire to tender his resignation as Chairman of the Board, upon completion of the present proposed financing and that it is expected that at that time H. E. Lewis, will be elected a Director and Chairman of the Board of Directors of the Corporation. Mr. Lewis is now Chairman of the Executive Committee of the Jeffrey Manufacturing Co., Columbus, Ohio, and was for many years Executive Vice-President of the Bethlehem Steel Corp.



NORTON COMPANY, WORCESTER, MASS.

BEHR-MANNING DIVISION, TROY, N. Y.

Norton and Behr-Manning Dealers in All Principal Cities

**For All Jobs  
on Your Portable Grinders**

**You'll Like  
NORTON WHEELS**

**P**ERFORMANCE . . . that's what you want and that's what you get with Norton Wheels on your portable grinders. There's a wheel for every kind of grinder—electric, air or flexible shaft—a wheel that's fast cutting and long lived. For high speed grinders—resinoid bond (formerly known as Bakelite); for low speed—vitrified bond. For steel and steel alloys—Alundum abrasive; for cast iron, brass, bronze and the like—Crystolon abrasive. There are straight wheels for the ordinary jobs, cup wheels for surfacing and small, cone-shaped wheels for the hard-to-get-at places.

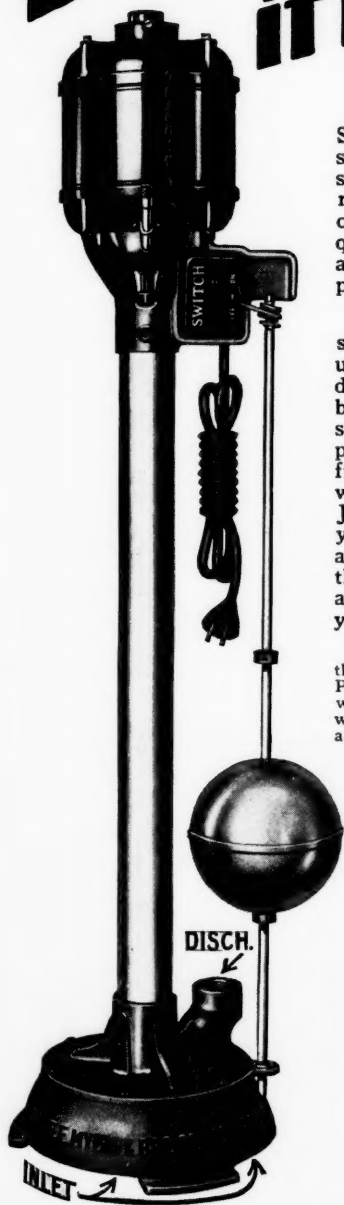
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**NORTON ABRASIVES**

MANUFACTURERS RECORD FOR

# MYERS CENTRIFUGAL SUMP PUMPS

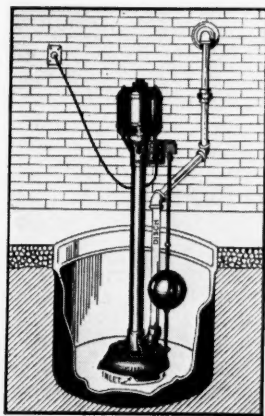
## Drain when it Rains!



Seasonable thaws — sudden showers — heavy rains — spring brings flooded basements and cellars—the dread of property owners who frequently suffer inconvenience and severe loss during this period.

This then is the time to sell and install Myers Centrifugal Sump Pumps. Expertly designed, compact and durable, simple and easy to install, they automatically pump flood or seepage water from basement or cellar without care or attention. Just the service many of your customers will welcome as dry basement insurance through the Spring season and all other seasons of the year.

If you are not already stocking the new Myers Centrifugal Sump Pumps, or if you are not familiar with their many improvements, write or wire us for new Bulletin and complete information.



**THE F.E. MYERS & BRO. CO.**  
**ASHLAND, OHIO**

PUMPS—WATER SYSTEMS—HAY TOOLS—DOOR HANGERS

APRIL NINETEEN THIRTY-SIX

## HERE ARE BETTER- DESIGNED COMPRESSORS FOR YOUR SMALLER AIR NEEDS

Gardner-Denver "AA" and "AB" vertical Water-Cooled Compressors are as carefully designed for the work they must do as any of the larger Gardner-Denver units. You'll find them a better "buy" for your smaller air requirements because they are:

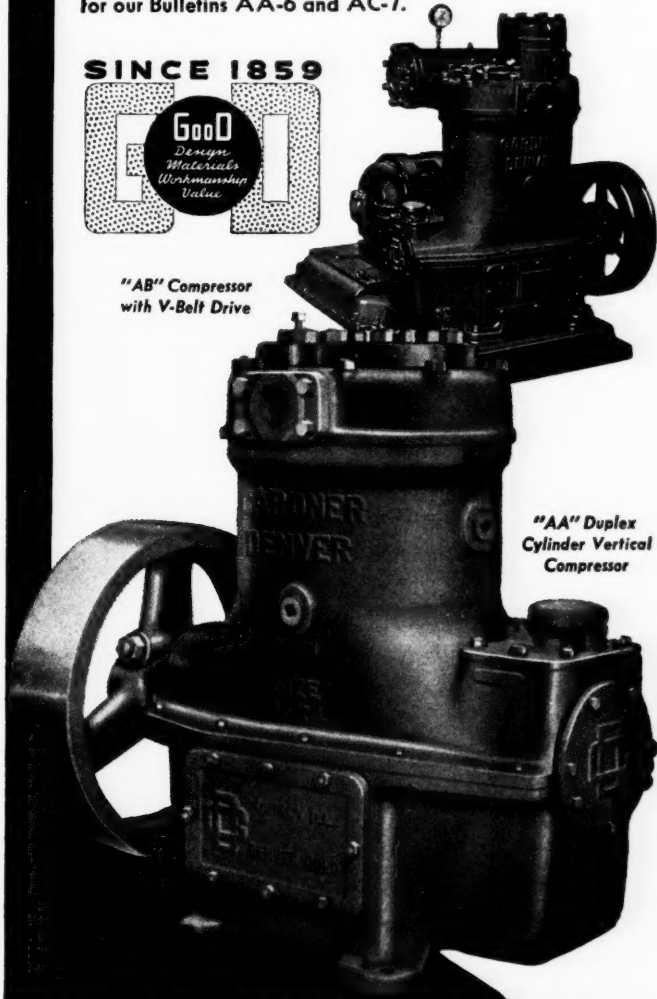
- 1 Compact, self-contained units, simple, sturdy and reliable in every part . . . fully balanced, smoother running.
- 2 Suitable for a wide variety of jobs such as hoist operation . . . spray painting . . . starting Diesel and gasoline engines . . . operating flue cleaners . . . or for "filling in" your air supply between peak periods.
- 3 Easily installed at any convenient point in your plant . . . quickly moved from place to place if desired.
- 4 Ideal for multiple installations . . . obtainable in capacities that assure maximum efficiency without waste.

Gardner-Denver also manufactures a complete line of air-cooled compressors and outfits for any type of service. Ask for our Bulletins AA-6 and AC-7.

SINCE 1859



"AB" Compressor  
with V-Belt Drive

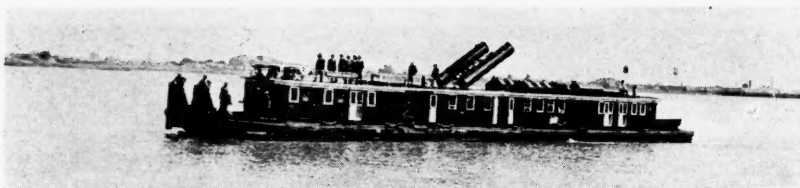


"AA" Duplex  
Cylinder Vertical  
Compressor

GARDNER-DENVER CO., 102 Williamson St., Quincy, Ill.  
Atlanta, Ga.; Birmingham, Ala.; Charleston, W. Va.; Knoxville, Tenn.; Houston, Tex.; Dallas, Tex.

## GARDNER-DENVER





Not "Dropping The Pilot"—Just Dropping The Pilot House and Stacks

## Folding Smokestacks and Disappearing Pilot House Aid Towboat In Ducking Low Bridges

Low bridges may prove obstacles to the passage of ordinary boats but not to the recently re-conditioned towboat, Montgomery, of the Federal Barge Lines, New Orleans, La. In its reconstruction its smokestacks are hinged as is the practice in Europe. Moreover its pilot house may be lowered to the main deck, so that when desired no superstructure is above the level of the deck house.

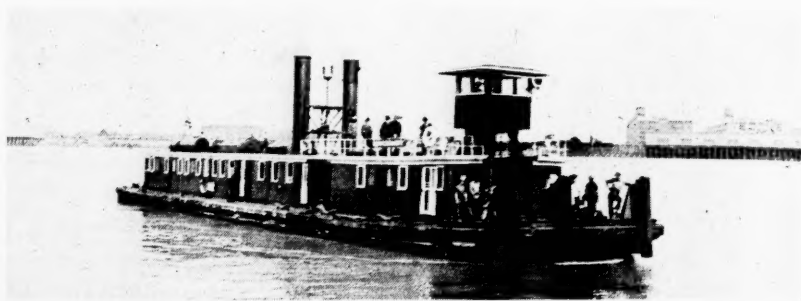
Laid up in Mobile, Ala., for a period of 3 years, it was decided by the Inland Waterways Corp. to reconstruct the superstructure in such a way as to permit navigation on the Chicago River and vicinity where bridge-clearance measures a scant 15 feet.

In 15 seconds by touching control levers, the captain or pilot can raise or lower the pilot house and stacks. To achieve this, a unique design was prepared and executed under the direction

of J. S. Brodie, superintendent of maintenance.

Built in 1920, at Jeffersonville, Ind., the Montgomery measures 140 feet in length, has a 24-foot beam, and draws 8 feet. She is fitted with two water tube boilers carrying 250 pounds of steam, and

Towboat With Pilot House In Elevated Position



two triple-expansion engines developing 800 horsepower.

Instead of the the conventional fixed pilot house the Federal Barge Lines' engineers conceived a pilot house atop a vertical hydraulic ram with a lift of 8 feet.

Another hydraulic ram, located between the boilers and projecting through the top of the deck house, raises or lowers the stacks, which are hinged flush, and when lowered lay flat on top of the deck house.

Savings in both time and money are foreseen by the use of the low-bridge model towboat. Able to duck virtually all average bridges, it will eliminate much of the time ordinarily wasted in waiting for lift and swing bridges to open. Channels and small streams, spanned by low bridges and which have not been navigated in recent years, may thus be made accessible.

# Steel

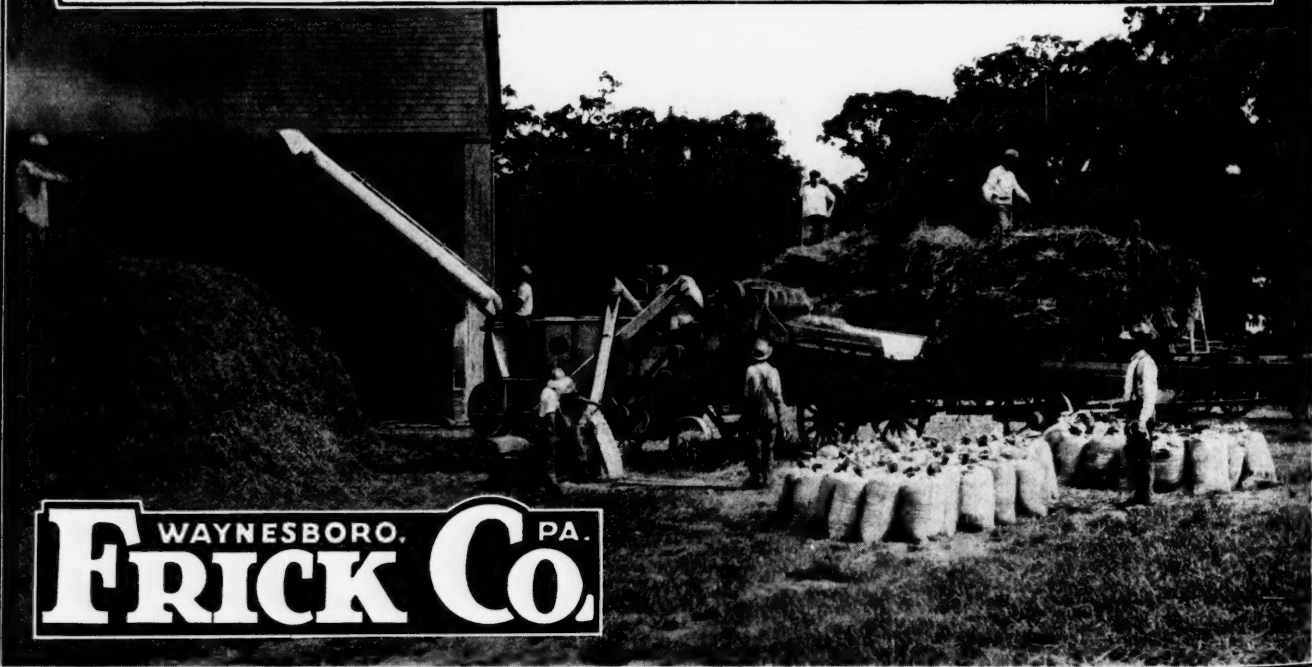


# Threshers

Are the last word in rapid handling, thorough separation and cleaning of grain—your insurance of better profits and satisfied customers.

Built to withstand hard service, with welded steel frame, simple construction and easy accessibility, Frick Threshers have a reputation for very low operating cost. Roller and ball bearings mean

light running. For better threshers, tractors, and saw mills, both new and used, get in touch with the Frick Branch at Charleston, W. Va., Salisbury, N. C., Columbia, S. C., Atlanta Ga., Birmingham, Ala. or Monroe, La. New and reconditioned equipment in stock. Write or call today.



WAYNESBORO, PA.  
**FRICK Co.**

## AGAIN AUTOMATIC STARTING SAVES ITS COST

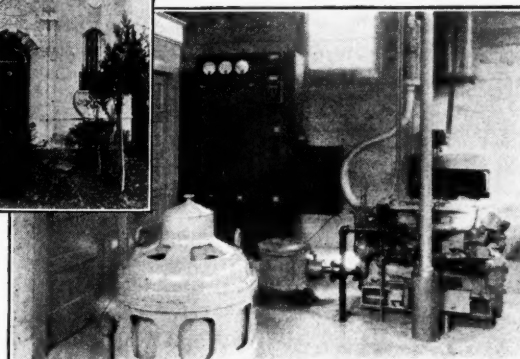
If current fails, the gas engine functions within 25 seconds, automatically.



Gas—Gasoline—  
Diesel Oil Engines



The Sewage disposal plant at San Rafael, Calif., is equipped with a Sterling Chevron C-4 cylinder 50 H.P. gas engine driving a DeLaval vertical sewage pump rated 5600 GPM, 23' head at 860 R.P.M. Gas fuel 1100 BTU.



Automatic equipment is patented. Thousands of starts have been successfully accomplished without a single failure, and with no attendant present.

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TAKE  
SIZE  
TAKE  
DEPTH  
TAKE  
USE  
TAKE  
QUALITY  
TAKE  
SERVICE

Take Size: 15 to 7000 gallons per minute.  
Take Depth: anything down to 1000 feet.

Take Use: wherever water is to be pumped for industrial, municipal or agricultural purposes.

Take Quality: designed and built to the express specification of delivering water at the lowest overall cost.

Take Service: international in scope, promptly available anywhere.

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### POMONA TURBINE PUMPS

## Diesel and Gas Engines from 30 to 1250 H. P. for Every Power Need

2 AND 4 CYCLE — VERTICAL AND HORIZONTAL SIZES

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Gas, Power & Equipment Co.,  
Birmingham, Alabama

## 1905 **Strand** 1936 FLEXIBLE SHAFT MACHINES

FOR MANY OPERATIONS  
YOU CAN'T GO WRONG WITH THE STRAND

Type M 5



THEY MAKE GOOD

MANY TYPES AND SIZES

1/8 to 2 H.P.

HORIZONTAL

OR

VERTICAL

SEND FOR CATALOG

Manufactured By

N. A. STRAND & CO.

5001-5009 N. Lincoln St.,

Type M 2



Chicago, Ill.

## Chemists' Work Discloses Agricultural Possibilities

Prosperity of Agriculture and Industry  
Interdependent

**T**O some of us who still believe in the economic value of "the earth and the fullness thereof" and are not in favor of restriction of crops, it is always interesting to read of the progress chemistry has made and is making toward more abundant yields from the soil.

The MANUFACTURERS RECORD has referred many times to the great advance of the Southern states in chemical manufacture. Every modern industrial plant today is convinced of the necessity for chemical research in the examination of raw materials and in the promotion of industrial sales to their furthest possibilities through major products and by-products, but in no field of enterprise is the value of the chemists' work more strikingly shown than in the field of agriculture.

The South not only has an interest in the utilization of its raw materials for the creation of new wealth through manufacturing processes, but it has a direct and important concern in the expansion of its agricultural output. In no other part of the country does nature

respond more generously to aids given to the soil.

Upon the success of agriculture depends to a large extent the success of industry, and upon industry depends the success of agriculture. Decentralized industry, which in many instances is economically advisable, creates in separate communities a market for the product of the farmer. The two are dependent upon one another.

It is therefore of interest to read a pamphlet "The South's Verdict" issued by the Agricultural Development Bureau of the Barrett Co., New York, and its associate, the Atmospheric Nitrogen Co., of Hopewell, Va.

While dealing primarily with nitrate of soda, this pamphlet also refers to sulphate of ammonia, a by-product of the coke ovens of the South's iron, steel and gas industries. This too is threatened by foreign imports and the publishers state "all that is said in this book about supporting the domestic nitrate of soda industry applies with equal force to this other important branch of America's nitrogen industry."

The pamphlet contains quotations from authorities in various Southern states as to the value of nitrate of soda in producing larger yields from the soil.

All of this has nothing to do with the restriction of crops of course—quite the reverse, but restriction is never pleasant

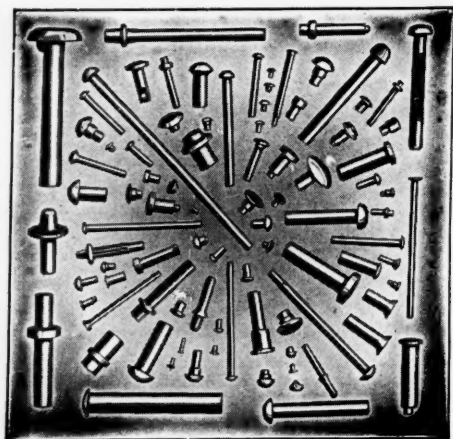
## Organize New Chapter Of American Foundrymen

Birmingham, Ala. — L. N. Shannon, of the Stockham Pipe & Fittings Co., was chosen chairman of the Birmingham section of the American Foundrymen's Association, recently formed here. W. L. Roueche, of the McWane Pipe Co., was named vice-chairman, and R. R. Deas, Jr., of the American Cast Iron Pipe Co., was named secretary-treasurer.

Members of the board of directors include: J. S. Bridges, U. S. Pipe & Foundry Co.; Arthur C. Smith, Hardie-Tynes Manufacturing Co.; Jno. W. Porter, Alabama By-Products Corp.; Wm. Oberhelman, The Hill-Griffith Co.; Charles L. Bransford, Republic Steel Corp.; Charles Hamilton, Alabama Pipe Co., Anniston, Ala.; and K. Landgrebe, Tennessee Coal, Iron & Railroad Co.

to contemplate with its corollaries of less labor needed, reduced manufacturing, reduced banking, a reduction of activities of almost every kind that engage the attention of man.

The book presents an array of brief excerpts of letters from industrialists, bankers, railroad men and farmers. They indicate the extent of the South's possibilities for development not from restriction, but from larger yields aided by the chemists' wizardry.



## MACHINE SCREWS

Hexagon and Square Iron and Brass Nuts.  
Interchangeable Bolts and Nuts (Promco Brand) Special Screws and quality Rivets to order.

Submit samples and advise as to quantity.  
Catalog for the asking.

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BUILDERS OF  
All Welded Ships

Marine and Stationary Boilers

Repairs to Steel and Wooden Vessels

1,500 and 600-ton Marine Railways

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We have plant and equipment for  
machining parts, building assemblies,  
complete units and machines.

HEAT TREATING AND GRINDING

Let us furnish quotations on your products.

GENERAL MACHINE WORKS  
York, Pa.





## PRECISION CASTINGS

of  
Iron, Brass, Bronze, Aluminum,  
Nickel, Silver.

We solicit your inquiries on difficult  
shapes requiring extreme accuracy

MODERN PATTERN AND MACHINE SHOPS.

THE

# RICHMOND

FOUNDRY & MANUFACTURING CO. INC.

RICHMOND, VIRGINIA.

"A Dependable Source of Supply"

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## Steel Castings

Weighing from 1 lb. to 500 lbs. each.

Quantity Production A Specialty  
Nickel, Chrome and Other Alloy

Quick Delivery  
Inquiries Solicited

CRUCIBLE STEEL CASTING COMPANY

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## HIGHEST GRADE CASTINGS

Gray Cast Iron, Semi Steel, Nickel Iron  
Castings up to 15 tons, machined up to 20  
ft. dia., Special Machinery, Pure Nickel,  
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Ideally equipped for production of special  
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USE

## SHIMER SUCCESS PLANING MACHINE KNIVES AND BITS,

Surfacing Knives and many Knives of smaller  
proportions for special duty in wood cutting.  
It will be to your advantage to look into this  
feature of our service. Our prices, too, are very  
attractive if you take in consideration their extra  
wear.

Samuel J. Shimer & Sons, Inc.  
MILTON, PA.



## PERFORATED METAL

of every sort

for Screening, Grad-  
ing, Ventilating or  
any industrial pur-  
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of many beautiful  
designs.

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65 years' experience enables us to give  
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of All Kinds of Metals for All Industries  
Write for Copper, Brass, Tin, Zinc or  
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## Erdle Quality Perforated Metal

For Cotton Gins, Cotton Seed Oil and Peanut Clean-  
ing and Grading. We solicit your inquiries.

Erdle Perforating Co., 171 York St., Rochester, N. Y.

## CLAY WORKING MACHINERY

For Brick, Tile and Block,  
from smallest to largest capacity.

Write for information

J. C. STEELE & SONS,

STATESVILLE, N. C.

# EARLE

Cut Spur, Bevel, Herringbone,  
and Worm Gears

All sizes. Every description. Oper-  
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"Les Simples" Cold Metal Saws.

The Earle Gear & Machine Co.

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# GEARS



## Get YOUR Sample DART Bronze-to-Bronze Union

A free sample to show you how two ground bronze seats  
give you twice the life from every Dart Union. Write  
for your sample! New Catalog and Price List No. 4-30.

E. M. DART MFG. CO.

Providence, R. I.

The Fairbanks Co., Sales Agents  
Canadian Factory—Dart Union Co., Ltd., Toronto

## International Petroleum Exposition Plans Pushed Fifteen Kinds of Displays to Feature Tulsa Show

Tulsa, Okla.—"The ninth International Petroleum Exposition May 16 to 23, will have the greatest array of scientific exhibits in its history," according to W. G. Skelly, president.

Oil companies are using five to ten times more scientific instruments than they used a few years back. The exposition through its scientific and technical committee, headed by W. A. Schleter, is gathering together an array of

new and unusual scientific devices which will take up approximately half of the scientific building. Exhibitors who have bought space will show many new scientific devices besides the special scientific exhibit.

Nearly 95 per cent of the Exposition exhibit space, which covers 15 acres of booths of the five buildings and open-air tracts, is now contracted for. There will be at least two rotary units "making hole" on the grounds during the show. The most elaborate display they have ever made, single exhibits valued at \$25,000 to \$50,000 being common, are being planned by the exhibitors.

Attendance at the ninth International

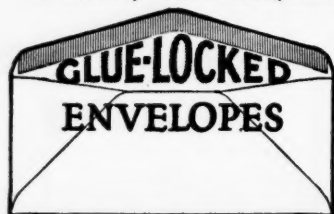
Petroleum Exposition besides being the largest gathering of oil men in 1936, may set a new high record according to present indications.

Such meetings as the American Petroleum Institute, Natural Gasoline Association of America, Independent Petroleum Association of America, and probably some 15 other oil associations will be held in conjunction with the Exposition.

The exhibits alone represent at the present time manufacturers of oil equipment in 26 states of the union. The oil man will have the opportunity of seeing the latest ideas, inventions, improvements, and new devices in the oil business.

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## THE OSCAR T. SMITH & SON CO.

*Manufacturing*

### BANK AND COMMERCIAL STATIONERS

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BALTIMORE, MD.

CHARACTER

QUALITY

—SERVICE—

## SALES HARMONY IN CO-ORDINATED PACKAGING



AS a Symphony Orchestra is melodious to the ear, a harmony of color and design is pleasing to the eye. Keep unity in mind when you pack your products. Have your labels, seals or bands, and boxes, of identical color and style and you will have a melody of effective advertising and greater sales.

Economy in art work and engravings is also made possible through "CO-ORDINATED PACKAGING."

A complete Art Department is maintained to create individual designs to fit your packaging requirements. Allow us, at no cost or obligation, to submit suggestions for your complete packaging.

### Old Dominion Box Co., Inc.

Lynchburg, Va.

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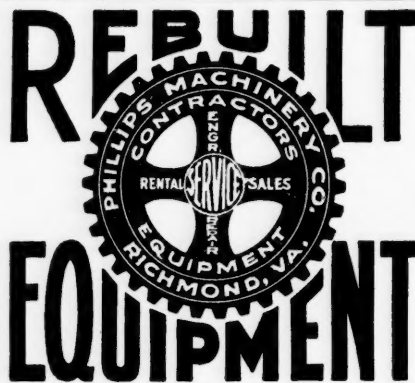
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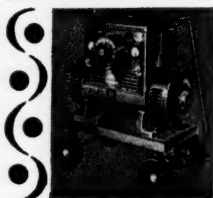
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## Research Needed to Show New Supplies of Tannin

**A** F O R W A R D.

LOOKING program of research for national welfare should attempt to anticipate the time when chestnut is no longer available and be prepared to meet it with the development of latent or new materials as new domestic supplies of tannin.

Chestnut wood, from which we now get almost two-thirds of our domestic supply of tannin, is facing slow but steady extermination by the chestnut blight, and just how long the American chestnut tree will last in important commercial stands is not known.

While there is not ground for alarm over an impending immediate shortage of tannin so long as we can draw upon the chestnut tree supplemented by other materials in a minor proportion, it is important to determine what these supplemental materials may be and this should be one of the major objectives of this research and a planned program of study of the problem. From information now available a number of materials offering promise should be tentatively selected and then subsequently accepted or rejected in accordance with the findings of research and trial.

While the matter is as yet in its earliest formative stage, it appears likely that the program may take the direction of cultivated tannin crops and plants, which would fit in with the present-day farm chemurgic concept.

For a number of years the Department of Agriculture has devoted attention to the study of the chestnut blight disease, the extent of its ravages and spread, and blight-resistant chestnut and related trees that might be introduced to replace our American chestnut trees. This work is handled by the Division of Forest Pathology.

The tannin production possibilities of Southern forests were candidly and concisely discussed by Mr. R. W. Frey, chemist and hide and leather investigator of the Bureau of Chemistry and Soils of the U. S. Dept. of Agriculture, at the March national conference on wood uses held in Beaumont, Texas. The two billion dollar leather industry, he said, uses about 450,000,000 pounds of vegetable tannic acid annually, more than half of which is provided by the American chestnut and the Eastern hemlock.

From five to ten years are required to introduce new tannic materials into the trade, he declared, and the Southern climate and its labor are favorable factors, as far as the United States comparison is concerned.

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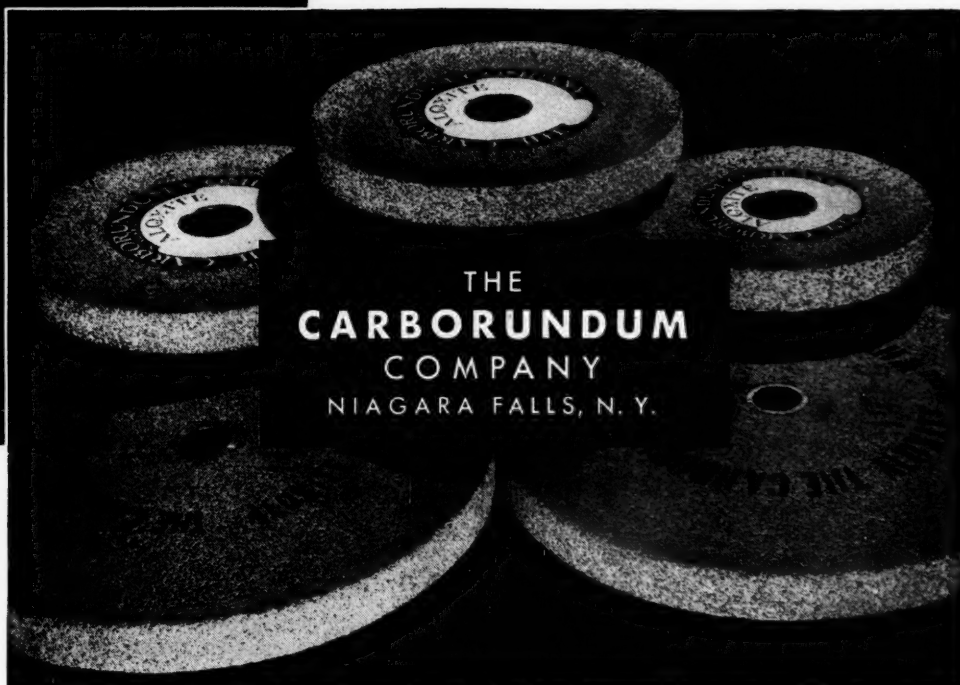
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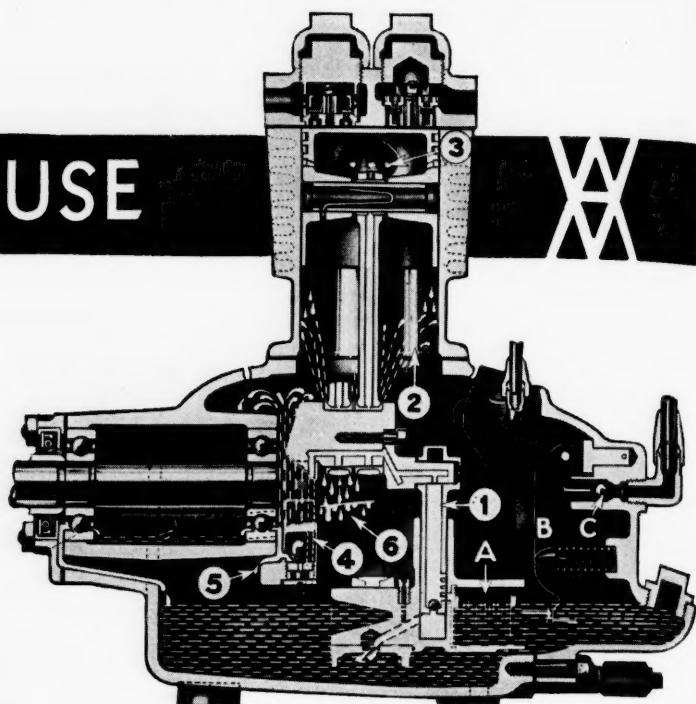
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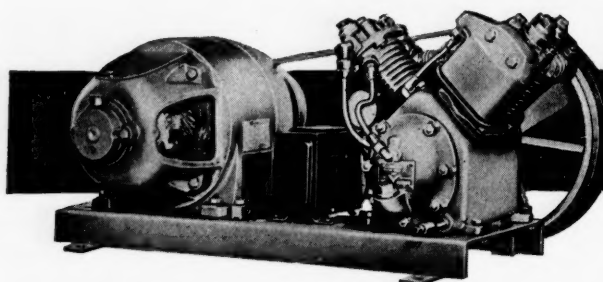
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